OHMS: Enhancing Access to Oral History for Free

Doug Boyd

Abstract: A recent effort at the Louie B. Nunn Center for Oral History at the University of Kentucky Libraries has sought to make using oral histories online more efficient and fluid. The Oral History Metadata Synchronizer (OHMS), a web-based system, provides users with word-level search capability and a time-correlated transcript or index, connecting the textual search term to the corresponding moment in the recorded interview online. This article reflects on the creation of OHMS and recent attempts to address its two original shortcomings: its inability to handle untranscribed interviews and its incompatibility with archives beyond the Kentucky Digital Library.

Keywords: archive, index, OHMS, open source, transcript, user interface

Since finding a home in digitized, networked archives, oral history has grown as a resource for historical and cultural documentation by both academic and community scholars. Yet it still remains underutilized because oral history can be a cumbersome resource to use, even in an online environment. This article is about the most recent effort at the Louie B. Nunn Center for Oral History at the University of Kentucky Libraries to make using oral histories online more efficient and fluid. It is called the Oral History Metadata Synchronizer (OHMS). OHMS, which was born in 2008, improves the ways that oral history collections are used online and enhances the oral histories by locating precise segments of online audio or video that match a search term entered by a user.

Since the original launch of the OHMS system, the Nunn Center has made over seven hundred interviews accessible utilizing this system. Usability improved; however, a review of the system revealed two major drawbacks. First, OHMS was originally designed to work with transcribed oral history, and very few oral historians, whether at a major program or a small project, can

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afford to transcribe on a mass scale. Second, OHMS was originally designed to work only for the Kentucky Digital Library. To broaden the potential pool of online collections that might use OHMS, the Nunn Center and University of Kentucky Libraries have launched a new phase of OHMS development. OHMS now includes an indexing component that offers an option for distributing oral history for a fraction of the cost that comes with transcribing. Most importantly, with the assistance of the Institute of Museum and Library Services (IMLS), the Nunn Center is currently preparing OHMS for free open-source distribution. As part of this initiative, OHMS is being developed as a plug-in, working seamlessly with other content management systems, including Omeka, Kora, CONTENTdm, and Drupal. OHMS was initially created in an archival context to serve an archival access imperative, yet its potential uses extend far beyond the archives. This case study reflects on the history of OHMS as it enters into a new phase designed for public consumption.

Background and Design

While digital technologies have transformed the way researchers and users discover and engage with archival materials, the digital world is still in its infancy. Software designed to offer access to archived materials is not sensitive to specific challenges posed by oral histories. Digital archival platforms (at least in the United States) are typically designed and optimized for providing access to digital photo and manuscript collections. They tend to treat the different components of the oral history information package (audio, video, transcript, index, and metadata) as separate entities. Users of typical archival platforms can access audio, access a transcript, and even search the text, all while listening to, or watching, the interview. However, the different components are rarely joined into one integrated experience that can aid access and use. In "Achieving the Promise of Oral History in the Digital Age" in Don Ritchie's The Oxford Handbook of Oral History, I wrote, "If a digital collection is placed online and the interface for accessing the interviews is not usable, the responsible repository may have increased the potential audience for those archival materials; functionally, access will more closely resemble the access models represented by boxes of tapes and stacks of printed transcripts."¹ The design and usability of archival interfaces will directly correlate to the discovery and effectiveness of the user experience.

The first version of OHMS built a bridge between transcripts and audio or video in order to make access to these interviews more effective. When an oral history collection is transcribed, the searchable text dramatically increases

¹ Doug Boyd, "Achieving the Promise of Oral History in the Digital Age," in *The Oxford Handbook of Oral History*, ed. Donald A. Ritchie (New York: Oxford University Press, 2011), 296.

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efficiency for users of oral history collections. However, most online platforms still required users, once they locate the desired information, to manually find the corresponding moment in the audio or video. But that is really a job for computers. Thus, OHMS was designed to connect the user from a location in the text to a moment in the recording; it proved quite successful.

This original version of OHMS was an efficient search and retrieval system designed for the Kentucky Digital Library (http://kdl.kyvl.org). It synchronized transcribed text with time code in the audio/video, as well as providing a user map/viewer that connected search results of a transcript to the corresponding moments in the audio or video. From its inception, OHMS contained two parts: the Synchronizer and the Viewer. The OHMS Synchronizer was a web-based space where metadata could be prepared for an interview and a transcript could be synchronized. The OHMS Viewer brought the digital interview and the synchronized transcript together online in an integrated space. Figure 1 presents a look at the OHMS Viewer and a glimpse of the user experience. Searching student-veteran Ian Abney's interview in figure 1 for the word "Fallujah" presented contextual search results in the right column.

Clicking on a search result took the user to the appropriate location in the transcript. On the left side of the transcript, timecode markers appear at one-minute intervals. Users click on the corresponding timecode marker and see/



listen to the corresponding moment in the interview. The design empowered users to effectively navigate an oral history interview.

The OHMS Synchronizer was designed to quickly locate the one-minute intervals in an interview and drop timecode markers into the transcript. Today, timecode can be included in a transcript at the time of creation.² We designed the original OHMS Synchronizer to efficiently encode previously created transcripts with timecode. The OHMS Synchronizer automatically took the timecoder (or, as we call it, the TC) to the fiftieth second of each minute, giving the TC ten seconds to locate itself in the text. When the clock hits the minute, a bell rings, and, with a click, the TC has embedded the appropriate time code into the text. Without pausing, the system skips to the next interval where the process repeats. Figure 2 and its accompanying video present a glimpse of the transcript synchronizing process, utilizing Robert Penn Warren's 1964 interview with Martin Luther King.

OHMS inexpensively and efficiently encodes transcripts of interviews and then connects the transcripts to the corresponding moments in the audio or video interview. Users reap the benefits. One hour of interview (transcribed) can be synchronized and submitted in a matter of minutes, and an index can be generated while listening to, or viewing, the interview. In addition to using OHMS to embed timecodes into the transcript, we constructed a viewer so users can see the time correlation between the transcript, or index, and the audio/



Fig. 2. OHMS Transcript Synchronizer (http://youtu.be/hwhEMNxXUzQ)

² Michael Sesling, "Case Study: Transcripts, Time-Coding, and You," in *Oral History in the Digital Age*, ed. Doug Boyd, Steve Cohen, Brad Rakerd, and Dean Rehberger (Washington, DC: Institute of Museum and Library Services, 2012), http://ohda.matrix.msu.edu/2012/06/transcripts-time-coding-and-you/.

video and navigate the interview; we also provided an integrated final product where the multiple components of an oral history interview information package all worked together. I was proud of OHMS and our innovative approach to presenting interviews online. However, OHMS was only being utilized by the Nunn Center and only worked with transcripts.

The Beauty and Challenge of Transcripts

Many oral history repositories transcribe every interview that they collect; however, this creates a limitation in the quantity of interviews that a single repository can accession, as transcription is expensive.³ At present, the Nunn Center has over eighty-five hundred interviews in its collection, sometimes accessioning up to seven hundred interviews in a single year. I have always known that, even with a modest endowment, the Center could never afford to transcribe all of our interviews, unless we dramatically limited our intake of interviews each year. Additionally, many interviews that had been transcribed in the past never had the final quality control audit conducted. As a result, many of the transcripts in our collection were "first draft" transcripts. Although we will provide a first draft transcript (with disclaimers) as part of our reference process, we committed ourselves to not hosting first draft transcripts online.

Generally, the cost of transcribing and auditing an interview averages between \$180 and \$200 per hour of oral history interview. Indeed, there are less expensive vendors we could utilize for transcribing, and the Nunn Center has experimented with utilizing students as transcribers. Regardless, it seems that, when factoring in the quality control audit, the final costs tend to remain at an average of \$180 to \$200 per interview hour. The original version of OHMS required a transcript, and Nunn Center policy required that, in order to be a candidate for the OHMS system, the transcript be a fully audited, final version of the transcript. As a result, only projects that had major funding were accessible in our own innovative system. There are thousands of interviews in our collection that I would like to make publicly accessible through the OHMS system. The likelihood of raising the millions of dollars necessary to transcribe and audit those collections, however, remains very small.

A potential alternative to transcription is automatic speech recognition. However, that technology is not far enough along, especially for a large-scale collection of often poorly recorded interviews containing multiple dialects. In his article for the Oral History in the Digital Age Project (http://ohda.matrix.msu. edu/), design and search expert Doug Oard clearly states, "easily readable fully

³ Linda Shopes, "Transcribing Oral History in the Digital Age," in *Oral History in the Digital Age*, ed. Doug Boyd, Steve Cohen, Brad Rakerd, and Dean Rehberger (Washington, DC: Institute of Museum and Library Services, 2012), http://ohda.matrix.msu.edu/2012/06/transcribing-oral-history-in-the-digital-age/.

automatic transcription of our most challenging content is not yet here, and not yet even on the horizon."⁴ Even using a perfect transcript has limitations, as text searches do not always offer access to interview content. For example, a narrator might describe living under segregation for several hours, without ever using the word "segregation." Future researchers interested in the topic of segregation would search, quite logically, for "segregation," in the hopes of discovering content useful for their research. Such keyword searching of a verbatim transcript fails, however, in mapping natural language conversation to descriptive and meaningful concepts.

Thus, a balancing act between resources and access via transcript is required. Having observed the oral history reference process firsthand, it is clear to me that researchers using interviews overwhelmingly prefer the transcripts. I have always worked with relatively large oral history archives that tended to privilege the transcript as an access point and, as a result, expended major resources (financial, personnel, and time) over the years on the creation of those transcripts. Yet privilege has its limits; scale and cost are insurmountable factors that tend to push the recordings into the background. Michael Frisch has written, "Scale tends to drive choices in tools and approach as well," and he has come to advocate indexing, rather than transcribing, as a way to create descriptive access points for an oral history interview or collection.⁵ Following the recent economic collapse and having experienced both underwater and frozen endowments, Frisch's advocacy made even more sense to me; it was clear that the Nunn Center could no longer afford to transcribe and audit transcripts on such a mass scale. As an administrator, the notion of cost- and time-savings created by indexing oral history interviews was extremely attractive. As we proceeded into a second phase of OHMS development, I chose to expand capabilities to include an indexing feature of the system.

Indexing: Quick and Affordable Options for Enhanced Access

If you were to go to the grocery store and ask the manager, "Where can I find the Cheerios?" the manager would, most likely, smile and say "aisle ten." At that point, you would, upon identifying the location of aisle ten, proceed down aisle ten until you were at the specific location of the Cheerios. In many ways, this is how I view the role of indexing an oral history interview.

⁴ Doug Oard, "Can Automatic Speech Recognition Replace Manual Transcription?" in *Oral History in the Digital Age*, edited by Doug Boyd, Steve Cohen, Brad Rakerd, and Dean Rehberger (Washington, DC: Institute of Museum and Library Services, 2012), http://ohda.matrix.msu.edu/2012/06/automatic-speech-recognition/.

⁵ Michael Frisch, "Oral History and the Digital Revolution: Toward a Post Documentary Sensibility," in *The Oral History Reader*, 2nd ed., ed. Robert Perks and Alistair Thomson (New York: Routledge, 2006), 105.

Having curated numerous analog oral history collections in the past (mostly recorded on cassette), I have always valued the analog tape-logging approach to creating descriptive metadata. Diligent interviewers listened back to their audio cassettes and identified/described major subjects in the interview, using a variety of techniques, which included partial transcription, keywords, and narrative description of the content. They then marked the location of this seqment by the cassette counter number. The tape-log, or index, gave the future researcher a sense of the content of the interview, as well as when it was discussed in the interview. The flaw in the analog system was always with the timemarkers. Analog counter markers were never true timecode markers, and they proved inaccurate and unreliable for connecting the user to the specific point in the recording referenced in the index. The expectation was always that the user would manually navigate to the corresponding moment in the analog recording. The digital index has the advantage of being a true timecode; however, very few digital archival systems have been developed to automate the linking of the timecode representing the segment created to the corresponding moment in the interview. This seemed to be the logical next step for OHMS.

The OHMS indexing system works very simply and efficiently. Once the digital interviews are uploaded and imported into OHMS, indexers log into OHMS and commence. Choosing the interview that they want to index, they are taken to a new page containing a player and a "tag now" button. While listening to the interview, indexers choose moments that they want to describe. Upon pressing the "tag now" button, the indexing dialogue opens up, containing the following fields: time stamp (auto-filled), title, partial transcript, keywords, subjects, description, hyperlinks, and GPS coordinates.

Indexers, not being clairvoyant, will not know something should be tagged until they have already heard the content. To compensate for the fact that indexing on the fly will always be just a few moments too late, the "tag now" button automatically drops the audio player back in time a few seconds. Indexers can then drop back or skip forward at fifteen-second intervals to place the time stamp in the accurate location for the segment's beginning. OHMS allows users to create thesauri that can be uploaded and auto-fill the title, subject and keywords fields, so as to encourage standardization and consistency. Once indexers describe the segment, they hit the save button, closing the segment window, and move on to the next segment. The following video example of indexing (fig. 3) presents a back-end look at the OHMS indexing process featuring an interview with Elmer T. Lee, Buffalo Trace Distillery's Master Distiller Emeritus, discussing what, in his opinion, makes good-tasting Bourbon.

The next video example (fig. 4) features an index as it appears on the user side. In this example, featuring an interview with Tyler Gayheart from our From Combat to Kentucky Oral History Project, when users search on the word "marine," they are given all the choices of segments in which an indexer chose to

Interview:	Interview with Elmer T. Lee, January 11, 2010
Timestamp:	00:50:55
Partial Transcript:	Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system Image: Construction of the second system
Segment Title: *	The Process of Selection
Subjects:	Current Thesaurus: None WhiskeyAnalysis
Keywords:	Subjects should be separated by a semi-colon. Current Thesaurus: LCSH-SpokeDB bourbon;tasting;selection;vanilla, smooth;flavor;barrel; warehouse; batch
Segment Synopsis:	Keywords should be separated by a semi-colon. Current Thesaurus: SPOKE Elmer T. Lee describes the process of selecting what he deems a "good" bourbon. Describes the process of tasting.

Fig. 3. OHMS indexing module (back end) (http://youtu.be/-M8XNZJK4do)

use the descriptor "marine" in one of the index fields. Users choose the desired segment, at which point the index accordions open, revealing all of the fields in the segment and allowing them to then choose to "play" the audio or video from that corresponding moment.

Indexing oral history interviews makes sense for a variety of reasons. As I previously mentioned, the Nunn Center, although still committed to targeted transcription, can no longer afford to transcribe on a mass scale. Yet I am still a major proponent of using the OHMS system to enhance online access to interviews through indexing rather than transcribing. Indexing an hour-long



Fig. 4. OHMS Index Viewer (user side) (http://youtu.be/rfnKFey6DQQ)

interview using the OHMS system can take anywhere from two to three hours, depending on the level of specificity in the indexing. At this point, the interview is ready to go online. The cost for the Nunn Center to utilize graduate students to index this hour-long interview is under \$30. This same hour-long interview would cost \$200 to transcribe and audit. To an administrator experiencing an economic downturn, this is an attractive option.

It is not just about the money, however. Access beckons as well. I see many untranscribed interviews in important collections sitting on shelves (often virtual), which are not candidates to put online using the original OHMS system. For example, we have over four hundred interviews with World War II veterans in our collection, most of which are awaiting funding for transcribing and auditing so that we could put them online. Indexing in OHMS allows us to create a workflow that puts these interviews online much more quickly and efficiently at a very low cost. Moreover, an index creates a very different representation of the content of an oral history interview, which has several advantages over the verbatim transcript, primarily the advantage of mapping the infinite possibilities of natural language into clear concepts described using controlled vocabulary. Remember the earlier example of the user searching a transcript for information on life under segregation when the interviewee, who speaks in detail of living under segregation, never utters the term "segregation." An effective indexer would map natural language content containing phrases, such as "we used separate water fountains and restrooms," "we went to different schools," or "we sat in the back of the bus," to the concept "segregation." Additionally, the effective indexer would simultaneously include searchable keywords, such as "bus," "water fountain," "public accommodations," and/or use uploaded controlled vocabularies, such as the Library of Congress Subject Headings, to use controlled terms such as "Segregation in education—United States."⁶ The newly developed indexing module of OHMS creates a searchable online index containing a variety of descriptive fields that also connect to the corresponding moment in the audio or video interview. The interview index can be created for a fraction of the cost of verbatim transcription and can be done much more quickly.

Additionally, the Nunn Center is beginning to experiment with using the OHMS indexing process to engage communities in the curatorial component of the oral history process. For example, we have recently begun a partnership with the Oldham County History Center in LaGrange, Kentucky. They have been conducting oral histories for several years but lacked the capacity to appropriately curate these interviews. Now, the Nunn Center curates the interviews; however, their constituents know the people, personalities, local references, and spellings. Through this model partnership, we will upload the interviews into OHMS and work with trained volunteers at the Oldham County History Center to index their own collections.

The OHMS viewer is not restricted to presenting either a transcript or an index. It accommodates both, allowing users to toggle between and search both resources, if available. I see this as the best of both worlds. When an interview being presented in the OHMS Viewer contains both a transcript and an index, users will first encounter an index enabling them to browse quickly or search the contents of an interview. When keyword searchability becomes necessary, users switch to the transcript and begin a more specific and targeted approach to information seeking. Additionally, the OHMS viewer could accommodate a transcript and a translation, when working with oral history in a multilingual context.

Open Source and Free

OHMS was rewritten using PHP, a ubiquitous programming language, and was optimized for implementation by others. In January 2012, the Nunn Center was awarded an IMLS National Leadership Grant to prepare OHMS for open-source distribution. Open source, however, does not always mean free or simple. Often,

⁶ For more information on the usefulness of indexing, see: Doug Lambert and Michael Frisch. "Meaningful access to audio and video passages: A two-tiered approach for annotation, navigation, and cross-referencing within and across oral history interviews," in *Oral History in the Digital Age*, ed. Doug Boyd, Steve Cohen, Brad Rakerd, and Dean Rehberger (Washington, DC: Institute of Museum and Library Services, 2012), http://ohda.matrix.msu.edu/2012/06/meaningful-access-to-audio-and-video-passages-2/.

open-source tools require a massive amount of IT and programming support in order to implement. The goal of this grant is to take the open-source tool we have already created and build in compatibility with some common archivally oriented content management systems used today. By the end of the grant in 2013, OHMS will be compatible as a plug-in with CONTENTdm, KORA, Omeka, and Drupal. In addition to building in the compatibility with the OHMS Viewer, our team intends to create educational modules not only for using OHMS but also for implementing OHMS on the server side. The hope is that smaller historical societies or similar organizations with very limited budgets and almost no IT support can take full advantage of the OHMS system for presenting oral history collections online.

Open-source tools must be designed with sustainability in mind in order to be truly successful. As an open-source solution, the OHMS system, once integrated into other content management systems, will need a sustained user community. Community is central to the successful sustainability of any opensource software. We will actively engage this community to provide feedback and information that will allow for effective and ongoing development and for the future innovation of this freely available tool.

Final Thoughts

OHMS is not the only annotation tool available, but it is free, simple to implement, simple to use, and designed specifically to accommodate oral history. What lies ahead, in terms of enhanced online archival access to oral history interviews? We are awaiting the maturity of automatic speech recognition and artificial intelligence, with their potential for automating access to large oral history collections. Likewise, the search is on for ways to help develop new kinds of metadata that not only capture the informed perspective of the archivist but also reach out to the worldwide audience that is beginning to use archived materials. As we celebrate OHMS, it is important that we recognize the limitations of our current conventions and practices, while also preparing our collections for future access. Transcribing, indexing, and descriptive metadata development, even when conducted by the authoritative archivist, are incredibly limited and subjective methods of representation. Increasingly, online communities will contribute and drive the creation of future access points. We must focus on improving representations of the rich content embedded in each oral history interview and designing archives that effectively connect information seekers to content. Digital access is not limited to a local audience, and our metadata standards need to better represent content for global users in multilingual contexts.

While we are very proud of what we have accomplished in the creation of OHMS, now is the time to make it more available to other repositories, institutions, and individuals. I believe that the mission of oral history is to record and make individual stories an accessible part of the historical record. However, when oral histories remain hidden on shelves in archives or prove too difficult or cumbersome for researchers to use online, we fall short of fulfilling this mission. We are experiencing an exciting level of awareness of oral history as both a methodology and an archival resource. My hope is that OHMS can be part of connecting these individual stories to the historical record. The mission of OHMS has transformed from enhancing access to the Nunn Center collections to empowering institutions, both large and small, to provide an effective, user-centered discovery interface for oral history on a large scale for a fraction of the usual cost.

Doug Boyd serves as the Digital Initiatives Editor for the *Oral History Review*. Also, he directs the Louie B. Nunn Center for Oral History at the University of Kentucky Libraries and is a recognized national leader regarding oral history, archives and digital technologies. Most recently, Boyd led the team that envisioned, designed, and implemented the open-source OHMS system that synchronizes text with audio and video online. He recently managed the IMLS grant project Oral History in the Digital Age (directed by MATRIX at Michigan State University), establishing current best practices for collecting, curating, and disseminating oral histories. E-mail: doug.boyd@uky.edu.