Digital Audio Recording

Digital recording of oral history interviews can produce recordings of better quality and longer life than recordings made on analog tape media. Digital recording also makes it possible to provide broad access to recordings easily through various network and Internet technologies.

The quality of digital recordings depends on mastery of best practices for recording, processing, storing, and editing, as well as careful selection of equipment.

Excellent guidance and tutorials for digital audio recording are available online:

U. S. Library of Congress. Digital Formats Guide —
http://www.digitalpreservation.gov/formats/index.shtml
This Web site provides a comprehensive guide to understanding digital formats for a wide range of materials, including audio files as well as digital images and text files. See, for example, the page describing the WAVE audio format, widely considered the most suitable digital format for recording oral history interviews for long-term preservation and access:
http://www.digitalpreservation.gov/formats/fdd/fdd000001.shtml.

Vermont Folklife Center —
http://www.vermontfolklifecenter.org/archive/res_audioequip.htm

This Web site provides the best, most up-to-date information on all aspects of digital audio recording relevant to oral history practice. The site includes equipment reviews and recommendations, advice on recording technique, and extensive links to further online and print sources of information.

Historical Voices — http://www.historicalvoices.org/oralhistory/audio-tech.html

On this Web site are detailed explanations of most aspects of digital audio recording, equipment selection, and effective recording practices, as well as digitization. The site includes online tutorials with downloadable audio samples.

This Web site is produced by the staff of MATRIX, The Center for the Humane Arts, Letters, and Social Sciences Online at Michigan State University in East Lansing, Michigan. "MATRIX is devoted to the application of new technologies for teaching, research, and outreach. As one of the premier humanities computing centers in the United States, MATRIX creates and maintains online resources, provides training in computing and new teaching technologies, and creates forums for the exchange of ideas and expertise in the field. (http://www2.matrix.msu.edu/about/)

MATRIX partners with many units at Michigan State University and with external organizations such as museums, libraries and archives that hold collections of cultural resources important for public access and humanities research, teaching and learning. MATRIX works with these partners to digitize collections, preserve digital resources and present them online for teaching and research purposes."

Transom — http://transom.org/

"Transom.org is an experiment in channeling new work and voices to public radio through the Internet, for discussing that work, and encouraging more."
Transom's Web site offers extensive, up-to-date information on recording equipment and techniques and audio editing tools. Although the intended audience is those who produce recordings for radio, much of the information is relevant to oral history practice, as well.

Oral History Association — http://www.oralhistory.org/technology

"The following resources are meant to assist oral historians making the transition from analog to digital recording; to choose a digital recorder and microphone(s) within their budget; to learn about basic digital recording concepts and techniques; and to provide a forum for communicating individual experiences with digital recording technologies. Oral History and Digital Audio was provided by Doug Boyd, Director of the Louie B. Nunn Center for Oral History at the University of Kentucky Libraries."
This source provides video demonstration of some of the common digital recorders being used by oral historians.

Digital Recording Equipment: Recorders

Digital recorders for oral history interviews must include the following features:
- record in uncompressed, WAV audio file format, at CD quality or better. CD quality is 16-bit, with a sampling rate of 44.1kHz;
- use readily available, high-capacity flash storage media;
- operate on both battery and plug-in power;
- provide easy USB connection for download of audio files to a computer;
- provide connection for an external microphone, preferably of the XLR professional audio type.

An excellent overview of digital audio recording and editing is available online on the Transom.org Web site: http://transom.org/tools/faqs/faq.recording_editing.html#USB.

Some digital audio recorders which include the features noted above:
> Marantz PMD-661
> Edirol R-09HR
> Olympus LS-10 Linear PCM Recorder
> Sony Professional Portable 24-bit Linear Audio Recorder
> Tascam DR-05 Portable Handheld Recorder

Digital Recording Equipment: Microphones

Microphones appropriate for recording oral history interviews should be *condenser* type (as opposed to *dynamic* type). Condenser microphones require a power source (called *phantom* power) supplied either by the recorder device or a separate battery.

Several digital field recorders come with built-in stereo condenser microphones which are quite good and record interviews well when the recorder can be placed in a good location equidistant from interviewer and interviewee.

Ideally, an external microphone should connect to the recorder with a balanced XLR connection, which provides the most secure and least noisy input. Field recorders often come with only a stereo mini-plug connection. Care must be taken with these connections, as they are easily dislodged. Special cables can be bought or made to convert mini-plug connections to balanced XLR connections.

For excellent overviews of microphone types and functions, see:

> **The Transom Tools Column: Microphones** —
> http://transom.org/tools/faqs/faq.mics.html

> **Akustyk: Microphones Used in Recording Speech** —
> http://bartus.org/akustyk/microphones.php
> This site includes a link to recent and frequently updated reviews of new microphone models.

Digital Audio Editing

Original digital oral history recordings should be renamed on their original media as required by a carefully designed file-naming scheme. After renaming, these original WAV files should be moved to a safe, secure digital archive location, such as a preservation server or a high-quality external hard drive. Copies of these files should be made for all other processing, including any noise reduction or other sound-enhancing work with digital sound editors, creation of transcripts or compressed files for online access, transfer to CD-R media for storage, or any other use.

Audio editing software is often needed to make access versions of original audio WAV interview recordings. Several audio editing software programs are available, from expensive, professional-level ones such as WaveLab (http://www.steinberg.net/en/products/wavelab.html) and Sound Forge Pro (http://www.sonycreativesoftware.com/soundforge) to freely-downloadable, open-source programs such as Audacity (http://audacity.sourceforge.net/).

Time logs, indexes, abstracts, and other search tools and finding aids are often desirable for making digital audio accessible online. These can be created with commonly available Web page tools, or specialized services and software can be used.

> **Randforce Associates, LLC**. — http://www.randforce.com/
> Randforce provides a range of professional digital tools for managing, preserving, and presenting oral history recordings.

Transcribing Digital Audio

Software is available for transcribing digital oral history recordings. Foot pedals with USB connections for computer use are also available to control playback of digital recordings.

> **StartStop Digital Transcription System** — http://www.startstop.com/
> This system includes a USB foot pedal and software to manage the playback of digital audio files and the creation of transcript documents. It works with most audio file formats and integrates seamlessly with common word processing programs such as Microsoft Word.
> **Express Scribe** — http://www.nch.com.au/scribe/
> This is open-source, freely downloadable software for playback and transcription of digital audio files. It works as a software-only system, with playback of audio controlled with assigned keystrokes. It can also be used with separately purchased USB foot pedals.

For preservation, word processing documents should be converted to a standard, widely-used text preservation format. The preservation format most commonly used for document exchange and preservation is PDF/A-1. Copies of transcripts for online access can be made in highly compressed PDF formats. Software such as Adobe Acrobat can also be used to watermark transcript documents with copyright notices, to prevent changes to form or content, and to limit printing.

> **Adobe. "Creating PDF/A Documents"** —
> http://livedocs.adobe.com/livecycle/es/sdkHelp/programmer/sdkHelp/wwhelp/wwhimpl/common/html/wwhelp.htm?context=sdkHelp&file=outputCreatingPDFA.45.1.html
> Adobe Acrobat software can create PDF documents for a wide variety of applications. This Adobe Web page provides general information about the PDF/A format, its creation with Acrobat software and its use in long-term document preservation.
>
> **AIIM. PDF/A-1: ISO 19005-1:2005 FAQ** —
> http://www.aiim.org/documents/standards/19005-1_FAQ.pdf
> This Web page of frequently asked questions provides complete information on the ISO 19005-1 standard which describes and specifies the PDF/A standard as a format for long-term preservation of documents.
>
> **U. S. Library of Congress. Digital Formats** —
> http://www.digitalpreservation.gov/formats/fdd/fdd000125.shtml
> This Web page provides an excellent overview of the PDF/A format for long-term preservation of text documents, including both technical specifications as well as general descriptions of the format's functions and use.