

The Role of Structural Metadata Throughout the Audio Preservation Process

Statement for the National Recording Preservation Board

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In response to *the Notice of Inquiry; Request for Information; Notice of Hearing; Study on the Current State of Recorded Sound Preservation*, I would like to take this opportunity to address points 5 and 6 of the section titled *Major Issues for Recorded Sound Preservation*.

To begin, we are witnessing a period of great change in the way we think about audio preservation. As a result, the collective communities concerned with the task of preserving recorded sound are struggling to understand the differences between the old analog approach to audio preservation and what new requirements will be needed to carry out long-term audio preservation in the digital domain. This is somewhat complicated by the fact that in many institutions, it is not trained audio engineers who have traditionally worked on preserving audio collections, but rather librarians and graduate students. These institutions are therefore poorly positioned to make the transition to digital audio preservation, due to a lack of institutional knowledge concerning audio production and engineering. Rather, these institutions tend to look to other digital preservation and access projects for a model from which to work in their planning. This is perfectly reasonable, given the available resources. However, the vast majority of existing projects seem to be still-image based collections, which offer only a limited insight into the requirements of a digital audio based preservation program.

Unlike still images, which are viewed at a pace determined by the viewer, audio signals are a series of continuously changing values over a pre-determined duration of time. It is possible to have a series of separate audio signals that must be reproduced synchronously in order to replay the recorded work. These properties of having duration and a starting position on a timeline are important markers that differentiate audio in terms of structural metadata requirements when contrasted with, for example, the still images that form the pages of a book.

There are several existing standards that may be used to provide structural metadata in the context of an audio preservation package. The Board is no doubt familiar with the Metadata Encoding and Transmission Standard (METS), which provides some structural metadata in a generic way. There is also Synchronized Multimedia Integration Language (SMIL), and the AES-31-3 Standard which is designed for simple project interchange between professional Digital Audio Workstations. Depending on the needs of an organization, any of these may be useful for providing structural metadata that describes the time-line relationship of one or more audio files to each other and to the original source material. At HCL-APS we have adopted the AES31-3 specification as our

structural metadata specification for the purpose of documenting the time-based relationships of our audio files. We have been able to leverage this metadata in a host of software utilities that we have developed for the NEH funded Sound Directions project. These utilities enable us to automate the collection of key technical metadata elements, the signal processing of our materials, and the normalization of data for the submission information packages (SIP) for our Digital Repository System. However, as useful as this structural metadata is in our production process, it is increasingly clear that this metadata may also serve an important role in the long-term preservation and access of our audio holdings. It is not hard to imagine a just-in-time delivery system that was driven from this structural metadata. In addition to using the document as a play-list, which is certainly possible, one could also use its file inventory to drive a just-in-time sample-rate conversion or even a format migration, to enable the archival material to be accessed from delivery systems that present a range of differing constraints on their input. Within the structural metadata document one might store markers that delineate interesting features in the recording, information about speaker assignment and even audio level changes. In essence it may become the basis of an *audio style sheet*, a concept that first came to me from Carl Fleischhauer during a Sound Directions Advisory Board meeting.

Another role that this metadata may play might be to provide a reference timeline for all manifestations of the recorded work. This is easier said than done, but I believe it is an important goal to strive for. I cannot count the number of times that I have been handed a reformatted audio work and a document that purports to tell me where within that work a performance can be found, with the request that I locate said performance and provide access to it in some new medium, such as a CD, only to find that person who did the original audio reformatting, did not take care to maintain notes or strive to make a 1:1 reformatting of the original, thereby invalidating the previously good information about the contents of the work. It is worthwhile to make every effort to reformat audio recordings so that if, for example, you knew that song 2 started at 3 minutes and 40 seconds, that would continue to be true in every manifestation of that work that you create. We have developed a series of methods for ensuring that this is the case during the Sound Directions project and we will share those as a part of the final report this spring. I encourage you to look for this report and see if our approach is compatible with your overall audio preservation planning. We have a rare opportunity to build this consistency into our collections now. It is something we will unlikely be able to do retrospectively, and it enhances the value of work immensely when patrons are able to readily locate what they are seeking based on what is already known of the work.

When published, the Sound Directions report will provide a number of concrete examples that demonstrate the value of maintaining structural metadata from the very beginning of the audio preservation process. I hope that you will give that report your attention as you continue to plan for national audio preservation activities. It has been our goal at HCLAPS to develop some base, open source infrastructure that will support audio preservation activities and their documentation; hopefully with the effect of freeing the audio engineers from spending their days correcting database entries so that they may focus their attention on their craft.