approach to produce lean programs that still comply with standards should now be turned to our thinking about keeping the previously well funded institutions afloat.

As is most often the case, our IASA members have the wherewithal to bring great expertise to the table and to help all our members manage the challenges we currently face.

One forum in which this debate can grow is at the Frankfurt IASA conference in September 2011. Titled "Digital Sense and Nonsense: Digital Decision Making in Sound and Audiovisual Collections", the conference will address many of the issues that are made overt by the circumstances we are now faced with. We are a long way down the road of digital preservation. We are past the period of proselytising our belief in the digital solution, or at least we should be: instead we are operating in a mature, standards based, technological environment. So why do so many presentations and papers treat the process like it's a new thing. We hope to talk about this and the many issues that continue to surface in our archival environment.

I look forward to seeing you all in Frankfurt.

Yours truly,
Kevin Bradley
President IASA

BEFORE CONVERGENCE WAS DIVERGENCE: PUTTING HUMPTY DUMPTY BACK TOGETHER AGAIN[1]

Anthony Seeger, UCLA

It is a great honor to have been invited to speak to the assembled members of IASA and AMIA. It is also a great pleasure to be talking with you here in the city of Philadelphia. This city is famous for a number of things, among them that it was for many years the home of Benjamin Franklin, a diplomat, publisher, inventor of a stove, bifocals, and of the recipe for a particular kind of spruce and molasses beer that you can still find in some local taverns. A lesser-known accomplishment of his was that he wrote ballads for his brother's newspaper in Boston. Not a single copy of his ballads survives. There were fewer archivists then, and we should all be somewhat concerned about the ability of our holdings to be accessible in 250 years. This is also the city in which the United States Constitution was written and signed, with its article on patents and copyrights, which I shall discuss later.

This paper has several parts, each one indicated with a subtitle and introduced with a verse of a song. It takes its title from a nursery rhyme about an egg named Humpty Dumpty who falls off a wall (see Figure 1): "Humpty Dumpty sat on a wall/Humpty Dumpty had a great fall/ All the king's horses and all the king's men/ couldn't put Humpty Dumpty together again." My reference to the nursery rhyme means to suggest that part of the problem we will have with convergence is that we are dealing with only fragments of a formerly unified thing – the egg, or the recorded event. Before the king's men futilely tried to put him together again, the egg/man had smashed into many pieces and could not be reconstituted. This is also partly our problem as multimedia archivists.
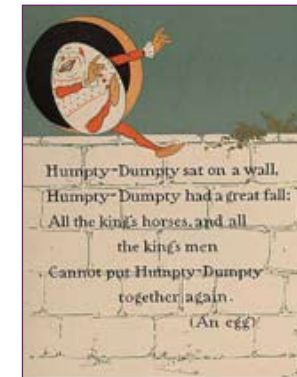

Figure 1. Humpty Dumpty, shown as a riddle with answer, in a 1902 Mother Goose story book by William Wallace Denslow (public domain, from Wikipedia, accessed 9 December 2010).

My presentation begins by describing two divergences that make our attempts at convergence more difficult. It goes on to discuss other challenges to convergence, including the number of people making audiovisual documents today, difficulties of language, intellectual property issues, hardware and software obsolescence, the unique characteristics of each form of media and others. Many of you in the auditorium or reading these words are working on the cutting edge of various kinds of convergence — in cataloging and metadata, digitization, legal issues, multimedia projects, and others. I cannot hope to address the technical details in each of your areas of specialization in any coherent fashion. Instead, my intention in this talk is to add some perspective on the issues you may not have thought much about.

I begin with a song.[2]
 "Lost, Lost Forever (The Archivists' Lament)"

Words by Anthony Seeger [CC] [①] 2010

There once was a collector who recorded some tapes
When she was done she needed some space
And so she did box them and carefully went
And stored them way down in her wet basement.

Chorus:
Lost, lost forever, no images and no sound
No one can use them, the collector abused them
Now we have lost them for good

A musician's young children knew that their mom
Recorded some songs at one time for someone
So they Googled the scholar and spoke to her son
Who said that he took them all to the dump.

Chorus: They were
Lost, lost forever, no images and no sound
No one can use them, the heir has abused them
Now we have lost them for good.

Before I start enumerating the challenges of convergence in the sense many of you probably think of it, I will highlight two divergences. These two divergences make our task of convergence immensely more complicated.

Divergence 1: The movement of Homo sapiens around the globe

Homo sapiens appeared a long time ago
And traveling the world we quickly did go
We talked and we sang and we danced as we went
But nothing remains, there were no archivists then

Chorus: Lost, lost forever, no images and no sound
No one can use them, archives didn't exist then
And so we have lost them for good.

Homo sapiens emerged in Africa and then spread (diverged from a single point) to most of the earth's dry land. As the groups separated, their languages also diverged. Ideas, expressions and experiences diverged. As a result of this first divergence, we have not only different languages, written scripts, and performing arts, but also different concepts of person, place, time and more. In the United States there is a tendency to presume the dominance of English language

and to focus on our own productions. Similarly, our automated data mining projects tend to focus on English language sources. But this is very shortsighted. The linguistic and conceptual divergences in human populations are immense.

We have little record of the divergence of our species because few traces have survived from that era. We do, however, have records of many of the contemporary dispersed communities — offshoots of that prehistoric divergence. One of these is the Suyá/Kïsêdjê tribe in Mato Grosso, Brazil, where my wife and I have spent years doing research and collaborative work.[3] When we first visited them in 1971, the 80 or so surviving members of the group lived in a single remote village of about seven houses on the banks of a small river that was very difficult to reach from other parts of Brazil. They had fairly recently made peace with Brazilians. The only recording device in the village was my battery-operated Uher reel-to-reel tape recorder. They were proud of their musical traditions and were happy to know that should their children not care to learn the music and stories I recorded, their grandchildren would be eventually able to consult them in an archive in the United States — although they had never seen an archive and only knew the United States was in the opposite direction from that of the Southern Cross in the sky.

Figure 2. the Suyá/Kïsêdjê village in 1972. Photo by the author.

In 2010 the Suyá/Kïsêdjê live in a large circular village of over 25 houses, with three other satellite villages not too far away, on the banks of a smaller river where their grandfathers lived before they made peace with Brazilians. Their village today has its own dirt airstrip and a nearby administrative building, bilingual school, infirmary, and culture center all administered by them. Their village can be reached fairly easily by a dirt road. Their population today is four times larger than it was in 1971, and everyone is healthier. An aerial photo of the current village reveals small white dots behind many of the houses in the village circle. These are parabolic antennas. The Suyá/Kïsêdjê are enthusiastic adopters of many kinds of technology,[4] and many

---

2   The Song: the purpose of the song that I wrote for this presentation, whose verses I have inserted at a number of points in my presentation, was to indicate the transition from one section to another, and also to repeatedly involve the audience in the progress of the paper by asking them to sing the chorus. The verses blame the loss of data on collectors, heirs, hardware and software obsolescence, and archivists — all of which will be familiar to readers of this journal. The song also calls attention to the types of data still unavailable for archiving and therefore unavailable for inclusion in any plans for conversions of current data. The points made in the verses are thus central to the paper itself. One melody to which you can sing this is that of "Sweet Violets" — a 1951 popular song. Dinah Shore's hit version http://www.youtube.com/watch?v=LtnLvrmyh3E begins with the chorus. After that you may sing the lyrics to that melody if you like, or make up another one. For those readers who were not in Philadelphia, I can only say that the assembled IASA and AMIA members sang beautifully and with enthusiasm.

3   For an English-language online encyclopedia entry on the Suyá/Kïsêdjê, view http://pib.socioambiental.org/en/povo/kisedje

4   For a discussion of research technology and local communities, see Seeger 2004-2005

houses now have DVD players.[5] They have a cultural resource center with three computers equipped with software for analyzing music and for transcribing their myth using their own orthography. They have digital copies of all of my recordings from the 1970s, which they transcribe and use in their productions and also as resources interview the surviving elders about traditions they do not know. They have a small video production company, with video cameras of a quality that my research budget does not permit me to purchase. And they have excellent microphones and are better filmmakers than I.[6] Like many communities around the world, they are enthusiastically documenting their own cultural traditions with all this equipment so that future generations can learn from today's elders.

This brings me to the first *convergence*. Almost all communities around the world today are busily using audiovisual equipment to document traditions they consider valuable with the intention serving future generations. They have been able to obtain funding or gifts of high quality audio and video equipment, and have learned how to use it with impressive skills. Documentation efforts have further increased after the adoption of UNESCO's 2003 Convention for the Safeguarding of the Intangible Cultural Heritage (UNESCO 2003), with its emphasis on creating national inventories of cultural items. But there has not been a similar emphasis on archiving and preservation. These well-intentioned world-wide efforts to transmit cultural traditions through media are based on a mistaken premise — that media will survive longer than human memory. In fact, as we know, most digital media today will not last very long, the equipment will become obsolete and the materials difficult or impossible to play back. If it is to survive, it needs to be archived. Yet a similar amount of money has not been invested in establishing audiovisual repositories where the new materials can be preserved, migrated to new formats, and ultimately made available to the future generations as wished by the recordist. On the contrary, most of our archives have seen their budgets cut, their staff diminished, and their contributions to world culture denigrated. Although there are some efforts to preserve Internet sites, it is difficult to predict how the Internet will fare as a preservation site in the long term. Whereas 40 years ago, the only recordings of the Suyá/Kïsêdjê came from my small tape recorder during the few months I was with them, today they record large amounts of videotape and audio recordings whose future is problematic.

The fragmentation of the event into several media, or when Humpty Dumpty falls from the wall

Remember the time when you danced all night long
And the smell of the air as you walked home?
Recall the crush of the crowd and the taste of the beer?
Your phone has a video — but none that's there

Chorus: They are
Lost, lost forever, no aromas, no tastes, no crowd
We lose all those feelings when with media we're dealing
Now we have lost them for good!

If the first diversion was the movement of Homo sapiens from a single part of Africa to the rest of the globe, another divergence was the fragmentation of events into a number of different media. Let's imagine that you, the participants in the IASA AMIA conference, go out

---

5   They are trying to maintain a degree of control over the new technology, however. They have refused an offer of powerlines to their village, preferring instead to be able to turn off the village generator and have everything silent. During the H1N1 flu epidemic in 2009 they closed their village to outsiders and took advantage of everyone being together to sing and dance for weeks on end without the interruption of NGOs, school schedules, or other outside involvement and obligations.

6   A short (5 min.) example of their filmmaking can be seen in the representation of one of their myths with subtitles in English, Spanish, and Portuguese: http://www.youtube.com/watch?v=wmtwNxYCUvo They have used two of my 1970s recordings as background music.

tonight for the Philadelphia pub-crawl and visit a number of the bars in the city. This event will be a combination of multisensory experiences. Some of these can be caught on still images — members of the conference holding up their mugs and smiling for the camera. Someone's cell phone could capture the view of IASA's President singing an Australian folksong after several mugs. And some aspects of your evening could be caught on audio recorders — the sound of the music, the noise of the crowd, the footsteps splashing on the wet sidewalk occasionally drowned out by the hissing of car tires on the rainy streets. With a bit more effort a museum curator could acquire the glass you drank from, the bar and its stools, and some of the liquor bottles and put them in a museum. One could argue that digitized photographs of these objects could be attached to the files of the audio and video recordings and to those of the still recordings and thus brought together in a kind of convergence. In fact, that is one of the objects of the discussions at our meeting.

But the convergence of these digital files of sounds, photos, and moving image would be only a partial convergence. They do not include everything. What is lost? First of all, aromas: the aromas of aftershave and perfume as you pushed up to the bar; the smell of the spruce beer, the stink of vomit in the bathroom; the fresh air outside on the street are all lost. We have not yet found a way to archive aromas, although they are very powerful aspects of experience. Second, physical sensations are not captured. The feeling of being pushed and jostled from all sides in the midst of the crowd by the bar is lost. The smooth feel of a cold glass in the hand, the pain of someone stepping on your toe, and the sensation of intoxication are unrecorded. We try to capture these sensations with words and in moving images, and of course in dances and songs. But those parts of your night out have been lost. And there is more: the taste of Philadelphia cheesesteaks, the spruce flavor taste of Benjamin Franklin's recipe for beer, and salty taste of the Alka-Seltzer taken later are also undocumented. While we have recipes for food and drink which can easily be digitized and stored, we do not have a way of recording the body's sensations of them. And there is yet more: the emotions and significance of the evening are part of your experience of this conference, and are not recorded. Your emotions are partly the result of the all of the other aspects of the event I have mentioned, plus the meanings you ascribe to them and the emotions sparked by them. In sum, while we are able to record parts of human experiences, like going to a bar, we really miss a lot of it still, no matter how sophisticated our equipment. One of the reasons ethnomusicologists and anthropologists participate in events as well as document them and interview people about them is because we seek to encounter some of the non-recordable experiential aspects of musical performance and social life, which in turn may give us insight into their significance.

Figure 3. The author singing and experiencing the Suyá/Kïsêdjê Jawari, September 2010. Photo by Elizabeth Seeger.

150 years ago there were only a few audio recordings on soot-covered paper and no moving image recordings at all. If Thomas Edison had invented the video recorder in 1877, instead of first an audio recorder and then later moving images, our archives and our fields would be very different today. In my field, music and dance would not have been separated. The cataloguing of sound and image would probably have developed in a single way rather than separately. Instead, the collection, preservation, and study of sounds went one way, and that of moving images another way, and physical objects yet a third. At this meeting we are working at how we might draw some of these three together.

Over the past century and a half some commercial media have brought aspects of experience together in order to create something like an original experience. Certainly the effort is one of the features behind the creative technique of filmmaking — Alfred Hitchcock could famously make viewers feel the emotions of protagonists. LP records, although almost forgotten today, were a great multimedia advance. Images, text, and sound were all present and easily readable through random access and without software. The CD-ROM later brought greater amounts of material together. And does anyone remember the Aroma Disc of the 1980s? This was not a recording medium, but rather a "CD-SOS" (my term: a small disc with Smell Only Scent) floppy-disk-drive-sized box that heated 7-inch computer disc look-alikes that gave off aromas that presumably would contribute to the experience of events such as a date. The host could choose among leather and spice, an Italian dinner, pine needles, and other scents that might enhance the occasion. I acquired one of these devices for the Indiana University Archives of Traditional Music and threatened to rename the institution the Indiana University Archives of Total Experience, but found it to be an unsuitable playback mechanism.

150 years from now people will laugh at the primitiveness of what we are able to record of events. They may well have devices for recording touch, aroma, and physical sensations as well as emotions. They may look back on the aroma disk as a pioneering endeavor on the level of the 1860 recordings of sound. Entertainment 150 years from now may be more like a full-experience computer game, or like the "holodeck" on the Star Trek science fiction series on television. In fact, as we think about how our converging information might be used, we would do well to consider the rapid development of computer games and how our materials might be used to create that kind of environment.

In sum, when we record a rich multi-sensory event like a trip to a bar in Philadelphia with existing equipment, it is a little bit like the figure Humpty Dumpty of the children's rhyme falling off the wall. We have bits and pieces of that event, but try as we might to put them together we cannot yet restore the whole event to its original completeness. As the rhyme says "all the king's horses and all the king's men could not put Humpty Dumpty together again." And one might add neither could all the world's audiovisual archivists. Any system for bringing together the data that we are currently able to record about human activities should leave room for future kinds of data to be added to it.

Having described two of the divergences that preceded our efforts for convergence (the migrations of Homo sapiens and their variation, and the incomplete data we can record about experience events) I will now turn my attention to convergence itself, and I will propose that it is a road paved with hell.[7]

Software obsolescence

Indiana folklorists worked for three years
To catalog their folklore on custom software
When they were done, how they celebrated!
But later the data could not be migrated

Chorus: It was lost, lost forever, they have no catalog at all
No one can find it, the computers can't read it
Now they have lost it for good.

In the early 1980s several Indiana University folklore graduate students worked for three years to create a database of the contents of the Indiana University folklore archive using customized software on a University mainframe. The cataloging was quite detailed, took a long time, and was a tremendous achievement. Not much more than a year after they finished, however, the university changed its mainframe computers. The computer staff migrated some of the software from the old mainframe to the new one, but did not migrate the cataloging program that had been developed for the folklore archive. An immense amount of labor and time were lost, and access to the collection still relies on the original paper records. One of the tremendous challenges to our efforts at convergence is the possibility of wasting vast amounts of time and money on projects that lead to dead ends. We have heard many similar cautionary tales at previous IASA conferences.

Hardware obsolescence

There once was an archivist who stored all on DAT
But when he tried, they would not play back
He learned that this format was now obsolete
And when patrons came by, he could only bleat

Chorus: Lost, lost forever, no images and no sound
No one can use them, the archivist abused them
Now we have lost them for good.

Hardware obsolescence has also plagued audiovisual archives. What is good for the market — selling new equipment and making media more portable — is not good for archives. There have been an alarming number of false starts in our preservation efforts. Copying materials onto DAT (never recommended by the IASA TC) was one of them; analog to digital conversion at CD quality was another; converting photos to low-level scans another, and converting film to DVD with some loss of quality is probably another. In audio archiving we agonized for a long time, and watched as digital technology and storage improved in quality and affordability, before deciding that 24/96 BWAV files were an acceptable, lossless, long-term storage solution. For video and film many of us are still waiting for an affordable, widely agreed-upon, format for our moving images. I am sure this will be a subject of discussion in some of the AMIA sessions in the coming days. I do hope you will eventually agree on one, because at the moment most audiovisual archives are storing their videotapes in the best conditions possible and waiting on the sidelines. It is still better to wait than to have to do the transfers twice — which is extremely costly and sometimes not even possible. Archivists have a huge responsibility to their material to ensure its long-term survival.

Intellectual property and ethical restrictions: to the melody of "This Land is Your Land"[8]

This song is my song, that song is your song
You just sing your song, and I'll sing both songs
My song's a copyrighted song, your song's a folksong
This song was made for only me

---

7   This is a play on the words of an English-language adage "The road to Hell is paved with good intentions." Convergence is a good intention — but it can include very unhappy experiences.

8   I have switched to a parody of Woody Guthrie's "This Land is Your Land" because of the contentious issue of music ownership today.

One of the great challenges to all kinds of convergence and public access is intellectual property and the ethical use of materials. I am not going address details of national or international copyright laws. Instead, I want to raise some more general issues that tend to get lost in the debates over the extensions of copyright terms and the demands of the Internet.

Most societies around the world have developed specific ways of controlling access to knowledge and also for transmitting it. The international copyright law we know is just one such system of ideas among many others. It is also important to note that ideas about rights over sound and image are often linked to concepts about person, to ideas about the origin and significance of sound and images, and to relationships of power. International copyright laws, and certainly those in the United States and Europe, are closely associated with 19th European and North American ideas about the individual, about creative genius, as well as a conviction about the value of the Capitalist market economy and colonialism. These ideas saw their greatest development during the romantic era of the 19th century and were not universally shared even among Europeans and Americans.

In keeping with our Philadelphia theme, here are quotes from two men whose ideas were involved in the establishment of the copyright provision in the U.S. constitution here in Philadelphia. Partly as a reaction to the English Crown monopolies on many types of manufacture, some American thinkers had strong reservations about the appropriateness of monopolies such as those in patents and copyrights.

James Madison, one of the signers of the Constitution, wrote in a 1788 letter to Thomas Jefferson in Paris: "Monopolies are sacrifices of the many to the few. Where the power is in the few it is natural for them to sacrifice the many to their own partialities and corruptions" (quoted in Hyde 2010:90).

Thomas Jefferson, who was elected the third U.S. president, expressed some widely quoted ideas in a letter in 1813:

> He who receives an idea from me, receives instruction himself without lessening mine; as he who lites [lights] his taper [candle] at mine, receives light without darkening mine. That ideas should freely spread from one to another all over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, *incapable of confinement or exclusive appropriation* (quoted in Hyde 2010:90-91, italics mine).

Thomas Jefferson's words could have been written today about the Internet. The issue of access to information and its free movement across the globe was as real in 1800 (though it took weeks for a letter to reach England) as it is in the 21st century. It is essential not to allow our thinking about ideas to be driven by the imagined consequences of technological change. Ideas about ownership are philosophical, rooted in ideas of value, person, and politics.

In spite of Madison's distrust of monopolies, the authors of the U.S. Constitution decided on a limited-term monopoly in order to benefit the common good and to promote the progress of science and useful arts. Article 1, section 8, clause 8 of the United States Constitution signed in this city allows Congress "to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." The wording emphasizes the benefit to society of the monopolies, and not their benefit to authors and inventors. This is a very different tradition than the one that stresses the authors' rights, assigns unalienable moral rights, and is identified with European copyright law. The purpose of the U.S. copyright provision was not to protect inventors and writers so much as to ensure a constant supply of new inventions and arts.

The challenge to audiovisual archives is not confined to the arcane details of copyright legislation. Some things that might be legal may not be ethical or appropriate. Archives need to be attentive to issues of cultural rights and social justice. One of the areas in which the international copyright conventions have been criticized is with respect to their treatment of oral traditions and traditional knowledge. Copyright legislation in most countries specifically excludes oral traditions and folklore from copyright. Intellectual property laws were developed in urban areas for urban, literate people working within a market economy. This leaves out a lot of people's knowledge, especially those living in rural areas and transmitting through an oral tradition. Many people around the world complain that they had no part in creating the Intellectual Property laws of their nations and that their own ideas of appropriate control and transmission are flagrantly ignored by national laws and international agreements. For example, not all music is meant to be commercial; it may have spiritual efficacy and be held in secret by distinct groups. Both UNESCO and WIPO are considering ways to protect traditional knowledge and traditional cultural expressions (UNESCO, WIPO). The United Nations Declaration on the Rights of Indigenous Peoples also addresses these issues and will probably affect access to archival collections.

An Australian illustration (continuing the parody of This Land is Your Land)

As I roamed and rambled in the Australian desert
I met a man whose music was secret
He told me it was wrong to pass on his song
To women, children, or anyone of another clan

In parts of Australia and the Pacific Islands, many relationships among social groups are established and maintained partly through *restrictions* to the flow of knowledge according to a person's age, gender, lineage, clan, and other distinctions. How does this work in an age of convergence, when all the knowledge of a group may be stored on a single computer? One of the challenges to control over the distribution of knowledge is that large databases and the Internet make all information available to everyone. Yet databases and the Internet do not necessarily require universal access. Some of the most interesting developments in indigenous rights are coming from Australia, where the rights of Aboriginal peoples are setting very interesting precedents. One interesting project is described by Kimberly Christen (2009), who was part of a team working with the Pitjantjatjara Council on a community archive. Like many other Australian indigenous groups, the Pitjantjatjara distinguish social groups and relations through restrictions on knowledge transfer. She reports that they established a system in which every member of the community has his or her own individualized login and password. Once logged into the main computer, that person would only be able to access information appropriate to his or her age, gender, and social group. Each person also has a space to assemble those parts of the appropriate knowledge desired for learning. In this way the community can document its knowledge and preserve it for the future in a digital form without abdicating their ideas of appropriate knowledge ownership. Younger members of the group will be encouraged to access those parts of it they are eligible to learn in a way that helps ensure a distributed transmission of the community's knowledge.

The Pitjantjatjara Council's project presents a direct challenge to the idea that convergence and the Internet will create a vast pool of knowledge for everyone. And they are not the only people who would like to keep part of their knowledge out of the general pool — witness the problems young people in the United States are having with Facebook pages that document their youthful exuberance but are later studied by potential employers. I suspect we are at the very beginning of an evolving set of ideas and practices about information access and the Internet, and that some changes may occur irrespective of changes in intellectual property legislation. Yet as we enact convergence we may find an increasing need to establish different standards of access and use, and ones that may not involve copyright law at all. Convergence of several media formats into one package can also create extremely complex issues of use rights.

Diversity of metadata

Our wires and films and tapes are all through
We must move them to digits, it's all we can do
But data need metadata — and specialists too
Or all of our work will have been to no use

Chorus: It will be
Lost, lost, forever, no images and no sound
No one can use them because we have fused them
The public has lost out for good

One result of the separation of different media formats into separate archives and different academic fields has been that different approaches were developed for cataloging and studying them. The study of sound, of still photographs, and of moving image, has each become quite specialized. Each field has developed its own approaches to the material. In our approaches to convergence it will be very important not to lose the distinctive perspectives of these fields of study. We must be careful not to throw out a century of reflection about each of the converging media in our enthusiasm for compacting them. This means we will have to think long and hard about what kind of metadata and associated data need to be attached to the digital files.

While it is fairly easy to agree on the importance of metadata about format and technical details, there is a lot of variation in the other kinds of data considered important or even essential to each format. Sheet music and most popular music recordings have distinctive and fairly standardized metadata — composer, publisher, genre, date and place of publication. This information can be automatically harvested from online databases. But if you add Brazilian Indian song to this there may be many performers — and instead of individuals a community name will be needed. There may be no human composer — many kinds of music are revealed to humans by spirits. Many songs have no identifying title, and dozens of distinct songs may have the same title, such as *agachi ngere (*rainy season unison song), which is spelled different ways at different times. In recordings sound quality and completeness are essential information. Photographs and moving image add yet more dimensions. The EVIA project at Indiana University has experimented with a way to get similar data about moving image by training researchers to annotate their own videos using specially developed software. The project has developed some very interesting methods for acquisition, entering metadata, preserving the originals, and making the information accessible for educational use that are worth studying (EVIA 2010).

Today, people around the world are texting, sampling, making mashups, blogging, and posting text, sound, and videos in previously unimaginable numbers. Everyone who can access it is looking for information online as well. We have a huge challenge before us, and real opportunities as well. Today, archives need not provide all the information — what is missing may come from users. There are opportunities to do collaborative, "crowdsourced" collecting and documentation. Some of these opportunities are beginning to be tried. Both the British Library and the Memorial University of Newfoundland have posted large collections of folksongs online. Both began to receive new information about the material they had posted, including the names of people in old photographs, additional information about the songs and the performers. Archivists used to have a difficult choice between access (which often damaged the collection) and preservation (which made collections less accessible). Today, access can improve collections.

Conclusion

IASA and AMIA meet for convergence and fun
To ensure access to collections before they are gone
But now it is time, I have a hunch
To end this keynote and all go to lunch

Chorus: Or we'll be
Lost, lost forever, talking on and on
We must eat and drink hearty
To remind us as we party
That life before divergence is fun

In conclusion, let me review some of the main points I have made in this paper:

1. The variety and diversity of human societies and languages is a great strength of humanity, and a huge challenge to efforts at convergence.

2. The desire of peoples around the world to document their lives for access by future generations may well come to nothing because there is no parallel effort to preserve and migrate the data being recorded on hundreds of millions of recording devices. Archives face huge challenges with dwindling budgets and reduced staff.

3. The aspects of human experience and expressions that we can now record are only fragments of the totality of a live event. Our recording devices are relatively recent, and will be considered to have been very primitive in a few decades. The modalities of recording will probably change; aromas, sensations, and emo tions may eventually be recorded as well. Thus whatever convergences we have now, we will have to add new kinds of data in the future. Our systems should be designed in a format open enough to allow the inclusion of new kinds of information, not limited to what now exists.

4. Our efforts at convergence will have to overcome some serious challenges, including
   a. What to call things and how to create systems that can handle the diversity of materials we are converging.
   b. Challenges of software and hardware obsolescence will plague us. Individuals and institutions that adopt new formats or make special adjustments to software may find they have wasted large amounts of time, energy, and money. The anguish that accompanies these experiences can be reduced if we communicate with each other and try to avoid making the same errors more than once.
   c. Issues of intellectual property and ethics complicate convergence and are both "moving targets" in the sense that they change even as we are trying to comply with them. (That's one reason why we attend IASA conferences.)
   d. The diversity of the kinds of metadata — the data about life's experiences and how to associate it with the converged recordings — separately developed for each medium will challenge efforts to consolidate them.

5. Collectively, those of us in AMIA and IASA are making some progress in addressing many of these challenges. But many of these things are constantly changing: by the time we have figured out how to manage them, they will have changed again.

Although we may not be able to achieve full convergence, our efforts will be appreciated by future users. But the process will be frustrating and incomplete. Whatever we come up with will require reformulation in the future, so we must also ensure the training of future generations of archivists. But I also suggest that part of the challenge before us in the coming days of the conference (or whenever these words are read) is to live with all of our senses, and to appreciate fully those things we cannot yet completely record, archive, and converge.

Thank you.

References

Christen, Kimberly. 2008. 'Archival Challenges and Digital Solutions in Aboriginal Australia.' *SAA Archaeological Recorder* 8(2):21-24.

Hyde, Lewis. 2010. *Common as Air: Revolution, Art, and Ownership.* New York: Farrar, Straus, and Giroux.

EVIA. 2010. EVIA Digital Archive Project: http://www.eviada.org/ Consulted 23 October 2010.

Seeger, Anthony. 2004-2005. 'New Technology Requires New Collaborations: Changing Ourselves to Better Shape the Future.' *Musicology Australia, Journal of the Musicological Society of Australia* 27 (2004-2005): 94-111.

UNESCO. 2003. 2003 Convention on the Intangible Cultural Heritage. http://unesdoc.unesco.org/images/0013/001325/132540e.pdf Consulted 9 December 2010.

UNESCO. 2010. Intergovernmental Copyright Committee Final Report 9 June 2010. Consulted 23 October 2010.

WIPO Secretariat. 2010. The Protection of Traditional Cultural Expressions/Expressions of Folklore: Revised Objectives and Principles. http://wipo.int/tk/en/igc/index.html Consulted 23 October 2010.

A NEW SYSTEM FOR THE SURVEILLANCE OF ANALOGUE PLAYBACK DEVICES

Timo Meyer and Jörg Houpert, Cube-Tec International GmbH, Bremen, Germany

Introduction

When large amounts of analogue sound carriers need to be digitised, a significant improvement of quality surveillance as well as time savings can be achieved by the use of modern technology, especially when collections are recorded in standard formats and if they are of mostly homogeneous technical quality. Mass digitisation very often relates to the unique media of our audiovisual heritage. Furthermore, for reasons of cost and effort, the transfer of these media can be done only once. That is why precise and efficient quality assurance actions are essential.

These actions can be classified into methods of quality assurance, which include securing the best possible signal path – such actions are taken before the actual recording — and methods for quality control which are taken during and after the recording process.

Detection of transfer-related errors is of high priority in mass digitisation, because where such errors occur, the technical quality of the archive file is reduced compared to the physical carrier. Of less importance is the detection of media errors (errors that are already present on the physical carrier), as such errors cannot be avoided during the digitisation process — they can only be logged.

The following will show how existing methods of quality assurance can be optimised by employing a new system which helps to ensure the integrity of the signal path by automatically evaluating reference recordings. When describing these methods and approaches, the focus is set on recurrent procedures. Obvious quality influences such as the qualification of employees, the definition of appropriate practices/the adherence to these practices, or simply the quality of the playback devices in use are not further described.

Quality assurance through optimising the recording path

Measures that are taken prior to an audio recording in order to improve its quality are generally related to quality assurance. One such measure is the optimisation and maintenance of the recording path.

The signal path consists of different single devices when digitising analogue sound carriers. In most cases the signal path is a series connection of the following components:

- analogue playback device
- analogue-to-digital converter
- audio interface
- recording software

Analogue playback devices are usually the most error-sensitive components in a digitisation system. It is therefore essential to regularly service and calibrate these devices. Additionally, the whole signal path should be controlled in regular intervals by using reference signals. Executing and evaluating such measurements is time-consuming and often involves a considerable technical outlay, plus it requires qualified personnel. For the determination of different relevant parameters it is usually necessary to carry out measurements with different test signals or media, and partially different measuring devices.

However, cleaning the tape path of reel-to-reel and cassette-tape machines can be undertaken by the operator. Depending on the quality of the archived tape material, cleaning should be done up to several times a day. As every practitioner knows, even playing back a single tape can leave remnants on the tape head, thus causing sound quality deteriorations for subsequent playback.