International Association of Sound and Audiovisual Archives

Internationale Vereinigung der Schall- und audiovisuellen Archive

Association Internationale d'Archives Sonores et Audiovisuelles

Asociación Internacional de Archivos Sonoros y Audiovisuales

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49TH ANNUAL CONFERENCE OF THE INTERNATIONAL ASSOCIATION OF SOUND AND AUDIOVISUAL ARCHIVES (IASA)

Access and Accessibility: Archival Policies and Barriers in the Age of Global Information Exchange

Accra, Ghana
1–4 October 2018

Open and equal access to information is in high demand, yet may be impeded by social, cultural, and economic barriers. The question of access at the same time encourages discussions on the technical, legal and practical modes of accessibility.

The programme committee for the IASA 2018 conference invites proposals focused on the prospects and limitations of global and local access and accessibility to audiovisual archives as well as on issues of discovery, care, preservation and dissemination of our sound and audiovisual heritage.

***** The deadline for submissions is: 23 February 2018 *****

Possible sub-themes include:

- Connecting users, materials, and communities
- Using semantic technologies to aid description and access
- Language diversity and oral history collections – best practices of accessibility
- Digital preservation methods for efficient access

The programme will include papers, posters, tutorials, and practical workshops.

Please find all conference information on the conference website: http://2018.iasa-web.org/.

For any further information or questions please contact the Organizing Committee and the conference administrator through enquiries@iasa-conference.com.

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In order to ensure diverse and clearly-articulated viewpoints in each issue of the journal, the IASA Journal solicits input and guidance from an Editorial Board consisting of the current IASA Editor and President as well as an invited group of IASA member representatives from each continental region throughout the world.

The IASA Journal Editorial Board provides general review and guidance on direction of the IASA Journal, meets once yearly during the IASA annual conference, assesses previous year's journal issues and makes general suggestions for future activities.

Board positions are entirely voluntary and receive no remuneration or financial support from IASA.

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TRANSFORMATION AND THE ABSENCE OF COMPLACENCY

Bertram Lyons, AVP, USA

Helen Harrison in her opening editorial in issue number 2[1] of the IASA Journal notes, "...on no account should we be complacent about the Journal or other IASA publications, ideas for change are always welcome and material for inclusion even more so." She was contemplating the state of the Journal on the heels of its transformation from the Phonographic Bulletin (1971–1993) to the IASA Journal (1993–present). The name had changed, but Harrison took the role of editor with ideas for additional improvements to the structure, content, operation, and aesthetics of the Journal; and she found herself also faced with the task of developing a new reputation for the newly minted IASA Journal. That was 26 years ago, and the IASA Journal has now been the IASA Journal longer than it was the Phonographic Bulletin. The transformation, we can say, was a success. Today, in 2018, as editor, I face a similar challenge: whether to transform the IASA Journal to an e-Journal, and whether to push for an open access model for content in the IASA Journal. These are two slightly independent changes that I am proposing for the Journal, and both have a variety of options associated with them.

The IASA Journal as an e-Journal

When we think about the IASA Journal as an electronic journal, we can consider it with or without a printed version. At one extreme, we can imagine an online platform that serves as the only access point to IASA Journal publications. Such a platform can provide a variety of discovery and access options for IASA Journal content, including text-based search, author indexes, online reading via PDF or HTML, syndication for subscribers, and API access for data aggregators, among others. We can also imagine these online access options with additional options for printed issues, either "on-demand" or in small batches. At the opposite extreme, we could imagine the same full print scenario we have today with the addition of an online access point with the options I mention above (although, this option, of course, requires the greatest cost to the organization). These are the types of options we are considering as we develop a strategy for moving the IASA Journal to an online home.

The IASA Journal as an Open Access Journal

A related question, once the Journal has an e-Journal access point, is whether the content of the IASA Journal should remain closed to the World, open only to IASA members and subscribers, for five years after its publication. This has been, and still is, the policy of the IASA Journal. But, *should* it be? Does such a policy support the central mission of IASA, as stated in its constitution, "to promote, encourage, and support the development of best professional standards and practice in all countries through communication, cooperation, advocacy, promulgation, dissemination, training and/or education, amongst public or private archives or libraries, institutions, businesses, organisations and associations which share these purposes?" Could we, as an organization, do better to disseminate the writings in the Journal to the global audiovisual archives community? Could we, instead of using the content as bait for membership, rather use the content as a shared resource that enriches IASA's network and entices new members to the organization? Launching an e-Journal does not require IASA to provide Open Access to the content; it merely offers the opportunity, and because of that, I think it valuable to have the conversation. So, these are the types of access questions that we are also considering as we develop a strategy for the IASA Journal online platform.

1 This was Harrison's first issue as editor of the Journal, and thus her first editorial.

If you, as a IASA member or subscriber, have thoughts on these topics, please feel free to reach out to me at editor@iasa-web.org. I am eager to hear from you.

The Issue at Hand

This issue, our third peer-reviewed issue, features a wide variety of topics important to the audiovisual archives communities today, including digital preservation, born-digital video, contemporary memories, diversification of the archive(s), repatriation of colonial and radio collections, and building stronger connections between archives and users of archival collections.

The issue commences with three profiles highlighting the human labor that underlies all archives and archival collections. In Ghana, Judith Opoku-Boateng interviews J. H. Kwabena Nketia about his work recording the songs and interviews that would become the cross-cultural foundation for the J. H. Kwabena Nketia Archives of the Institute for African Studies at the University of Ghana. In Australia, Melinda Barrie talks with sound scholar Robyn Holmes about her lifelong passion to dissemination and document Australian music. And, in Italy, Ettore Pacetti and Daniela Floris discuss the pioneering fieldwork of the Italian ethnomusicologist, Diego Carpitella, and how his efforts laid the seeds for the current project of the Audiovisual Archives at RAI Teche to bring Italian cultural heritage to a worldwide audience.

Paul Conway and Kelly Askew, both of the University of Michigan, provide a glimpse into efforts to organize, describe, and "re-broadcast" content from Voice of America's radio program *Music Time in Africa* to new audiences. Conway and Askew contextualize the issues associated with providing access to cultural heritage resources, and conclude with a proposal for a proactive strategy for online dissemination. Approaching the topic of repatriation of cultural heritage from another angle, Diane Thram, from the International Library of African Music in South Africa, articulates the effort that she and her colleagues undertook to hand-deliver (or, digitally return) recorded copies of performances to musicians across the African continent. Beginning with Uganda, and then Kenya, Thram and colleagues located performers and descendents from recordings made by Hugh Tracey and coordinated visits to return and re-study the music and performances that had been recorded more than 50 years ago with musicians in these locales. Together, these two articles offer a thorough glimpse into the theory and practice of post-colonial archival practice.

Reformulating a talk that was delivered at this year's IASA conference in Berlin, Gisa Jähnichen of the Shanghai Conservatory of Music in China, along with colleagues Ahmad Faudzi Musib (Malaysia), Thongbang Homsombat (Laos), Chinthaka Prageeth Meddegooda (Sri Lanka), and Xiao Mei (China), take a close look at the successes and failures they see in the small-scale audiovisual archives where they work in China, Malaysia, Laos, and Sri Lanka. The work of these authors lays a foundation for conversations about how to ensure that audiovisual archives maintain living networks and continue to develop capacity within and outside of the archives themselves. If smaller archives in Asia are to sustain themselves in the digital present, what are the key issues that must be addressed? And, what can archives in other regions of the world learn from this study?

The remaining articles in this issue move from questions of the management of archives, to technical questions about the digital infrastructures and digital formats that we are facing in audiovisual archives today. Silvester Stöger, from NOA in Austria, looks at the needs of broadcast archives with regard to production and preservation workflows, describing the values of an archive asset management system that can integrate with other business sys-

tems in a broadcast environment. Iain Richardson, from Vcodex, Ltd. in the UK, illustrates the lossy process of data reduction as a compression technique in digital video, offering insight into quantitative and qualitative methods to compare quality in digital video objects. From the Alexander Turnbull Library, National Library of New Zealand, Valerie Love describes the changes that the acquisition of born-digital content, specifically oral history content, has brought to the archive's standard operating procedures. Wrapping up this issue, Ariane Gervásio, from the Brazilian Association of Audiovisual Archives, challenges readers to re-imagine the concept of personal memories in today's transmedia world, where traditional concepts of content and media—e.g., a song exists as a single recording in a single place—must be understood as a multifarious entity, perhaps existing initially as a video posted to one web platform, yet then interacted with by users in another web platform, leaving a complex trail of engagement that ultimately constitutes the object that will be collected by an archive. Are we, as audiovisual archivists, ready to conceive of contemporary born-digital content in this way? Do we have a choice?

I look forward to hearing your thoughts on the contents of this Issue, as well as on the future of the IASA Journal.

Bertram Lyons, CA
IASA Editor

A LETTER FROM IASA'S PRESIDENT

Toby Seay, Drexel University, USA

I am happy to report that the 2017 IASA conference at the Ethnological Museum in Berlin, Germany was a great success. The conference theme 'Integration and Innovation: Bringing Workflows and Formats Together in the Digital Era' lived up to its name by providing valuable discourse concerning the ongoing developments within sound and audiovisual collections. This conference also marked the transition of the Executive Board as 2017 was an election year, and it is my pleasure to write my first presidential message in the IASA Journal. Joining me, as the other new member on the Executive Board, is Zane Grosa, who has taken the role of vice president of conferences.

I would like to take this opportunity to thank Bruce Gordon for his tireless work as vice president of conferences as he leaves the Executive Board. With his coordination and programming, IASA hosted six highly successful conferences in Delhi, Vilnius, Cape Town, Paris, Washington, and Berlin. We owe Bruce a great deal of gratitude for his hard work and we look forward to his continued involvement in IASA.

I personally want to thank Ilse Assmann for guiding IASA for the last three years as president. I am extremely grateful that she stays on the Executive Board as past president, as her guidance and mentoring will be valuable to the success and continuity of the organization. Under her leadership, IASA remains financially strong, authoritatively empowered, and forward thinking.

I am also grateful for continuing Executive Board members, who stepped up for another term to lead this organization: Judith Gray, Lynn Johnson, Bertram Lyons, Pio Pellizzari, Richard Ranft, and Tommy Sjöberg. Their capable service and commitment to the organization ensures a healthy organization.

I would like to talk about three highlighted initiatives that are vital to IASA.

The Ambassador Programme was launched at the Berlin conference, which will serve to "increase awareness of IASA and its work, to promote membership, to mentor new and prospective members, and to help build IASA's profile (https://www.iasa-web.org/ambassador-programme)." We start the program with five Ambassadors:

Filip Šír, Czech Republic (Ambassador Programme Coordinator)
Gisa Jähnichen, China, Malaysia
Judith Opoku-Boateng, Ghana, West Africa
Perla Olivia Rodríguez Reséndiz, Mexico and Latin America
Maria del Carmen Ordoño Vidaña, Mexico

We look forward to their leadership in propelling this program across the globe.

Initiated at the Washington Conference and spearheaded by Will Prentice, the Training Taskforce was a yearlong investigation into ways IASA could identify audiovisual training needs and to create recommendations for addressing those needs. Now posted in the Training & Education Committee Forum for members to read (https://www.iasa-web.org/forums/sections-committees-branches/training-and-educational-committee-forum), the final report serves as a framework for future training efforts, which are identified as a priority both in the field of audiovisual preservation and within IASA's membership.

The Diversity Task Force, led by Judith Opoku-Boateng, met in Berlin to explore the notion of diversity within IASA and how it affects the organization. The discussion that was initiated in this meeting continued throughout the conference, as the topic engaged our delegates who demonstrated the value of our collective voices through the quality of the conference programme.

I firmly believe that these three initiatives are interrelated and provide the catalyst for IASA's growth as an organization. We will be using the Ambassador Programme and training opportunities in a coordinated fashion to insure an open and diverse IASA. We preserve sound and audiovisual materials so that all stories can be told.

As we work towards that end, I invite you to join us in Accra, Ghana for the 49th IASA Conference, 1–4 October, 2018. The Institute of African Studies (IAS) at the University of Ghana will host what is sure to a be a powerful and memorable conference.

Toby Seay
IASA President
January 2018

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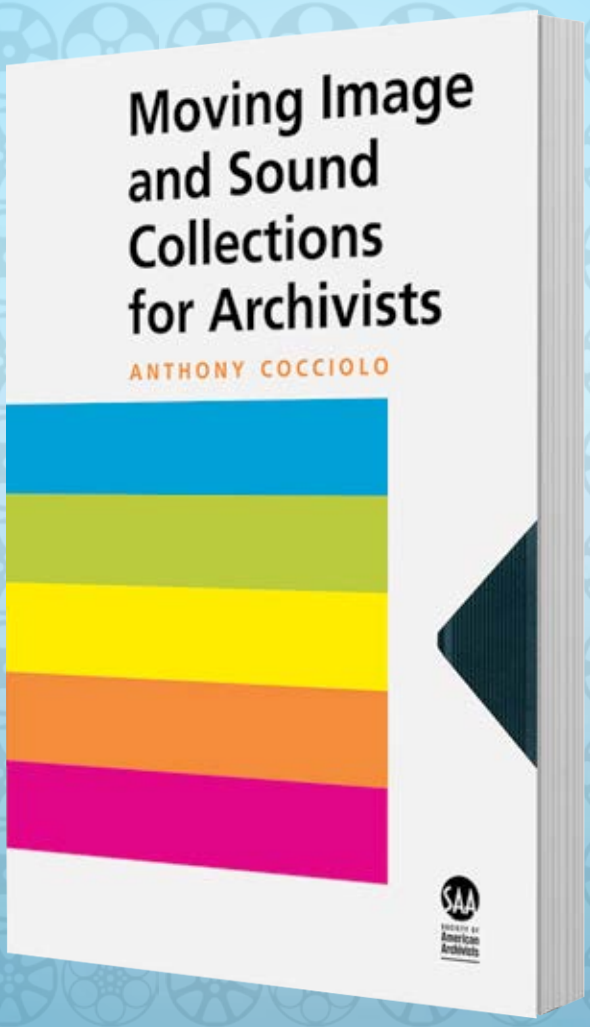

"Written for those who find themselves frustrated by pesky audio-visual recordings that are found in mixed collections, this book is impressively comprehensive, covering everything from accessioning to access, with media-specific guidance. It's essential reading for seasoned professionals and students alike."

—Kara Van Malssen, Partner and Senior Consultant, AVPreserve

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'IT'S YOUR STORY, DON'T LOSE IT' – USING SOUND AND IMAGE HERITAGE TO BRIDGE CULTURES

Conversation with J. H. Kwabena Nketia on the occasion of World Day for Audiovisual Heritage 2016

Judith Opoku-Boateng, J. H. Kwabena Nketia Archives, Institute of African Studies, University of Ghana

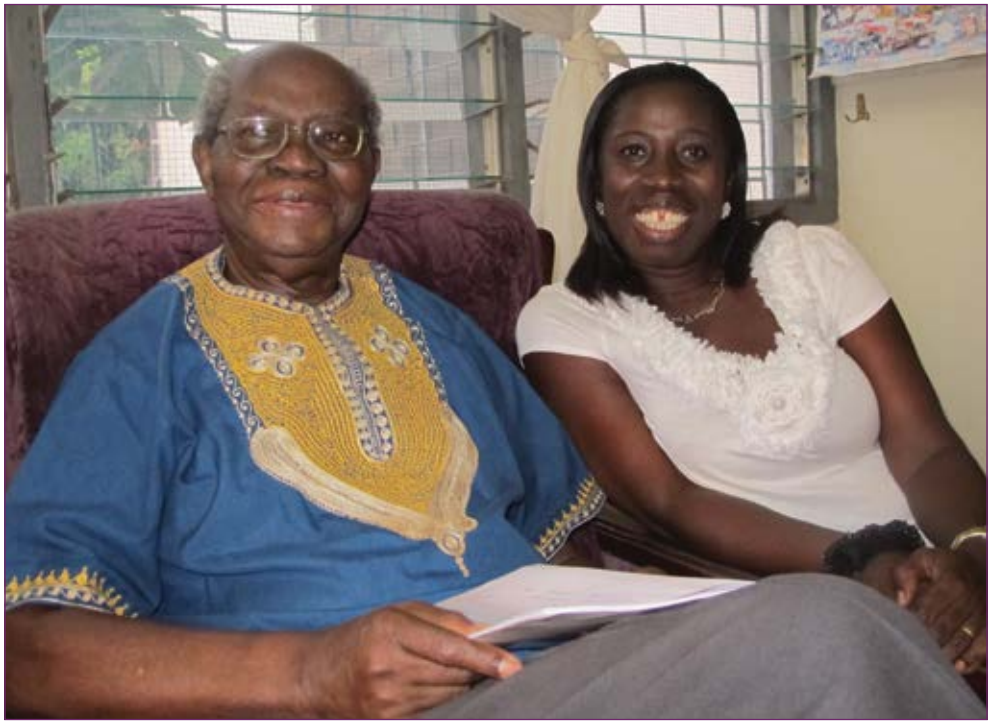

Figure 1. Judith Opoku-Boateng with J. H. Kwabena Nketia.

1. Introduction

On 27th October, 2016, the J. H. Kwabena Archives of the Institute of African Studies at the University of Ghana joined forces with UNESCO and other audiovisual archive institutions globally to celebrate "The World Day for Audiovisual Heritage" (WDAVH), a day set aside by UNESCO to raise general awareness of the need for urgent measures to be taken and to acknowledge the importance of audiovisual documents as an integral part of national identity. The theme for that year's celebration was "It's your story, don't lose it." My outfit organized a roundtable discussion on the theme and invited three renowned professors from the University of Ghana, who have had tremendous experience in fieldwork documentation, archiving, and dissemination. The three discussants were; Professor Daniel Avorgbedor[1], Professor John Collins[2], and J. H. Kwabena Nketia, founder of what is now known as the J. H. Kwabena Nketia Archives. After the roundtable discussions, I did a solo interview with him

1 Read more about Prof. Daniel Avorgbedor here: http://www.ug.edu.gh/music/staff/prof-daniel-avorgbedor
2 Read more about Prof. John Collins here: http://www.ug.edu.gh/music/staff/prof-edmund-john-collins

on UNESCO's theme for the day. This interview collates the views I gathered from Nketia from the roundtable discussion and the subsequent solo interview in the comfort of his home in Madina, a suburb of Accra.

2. Brief on J. H. Kwabena Nketia

J. H. Kwabena Nketia is a living legend. Born on June 22, 1921 at Asante Mampong in the Ashanti Region of Ghana, he is widely known and celebrated as a brilliant and versatile composer, an authority on African music and aesthetics, and a distinguished writer. He has over 200 publications not only in English, but also in his own mother tongue—Twi, in which he has written more than 20 books. He also has more than 80 musical compositions to his credit, including solo songs, and choral pieces. Nketia's publications provide important and insightful material for the study of African history, mythology, literature, poetry, dance, drama, music, aesthetics, cultural anthropology, religion, and philosophy, creating a wealth of knowledge on African societies and cultures (Hagan, 2015).

Nketia's understanding of the African worldview is exceptional, and this partly comes from having been exposed to deep Akan culture from very early in his life (Euba, 2014). Nketia was the first African Director of the Institute of African Studies, University of Ghana. Nketia has lectured in leading universities around the world, including the University of California, Los Angeles (UCLA); Harvard University; the University of Pittsburg; and China Conservatory of Music. His Africanity was never blown away despite his international exposure. He is the recipient of numerous local and international awards

Currently, he is the Chancellor of the Akrofi-Christaller Institute of Theology, Mission, and Culture at Akropong in Ghana; a Foundation Fellow of the Ghana Academy of Arts and Sciences; and an Honorary Fellow of the Royal Anthropological Society of Great Britain and Ireland; among other honors (Foundation, 2013).

3. The Conversation

Judith Opoku-Boateng (JOB), Interviewer – Today is "World Day for Audiovisual Heritage," a day that has been set aside by UNESCO to acknowledge and create awareness about audiovisual heritage. The theme for this year's celebration is "It's your story, don't lose it." You are a living legend in this country, and looking at your profile, it is evident that you have a special passion for audiovisual heritage preservation. You have donated your entire collection of field recordings to the archive at the Institute of African Studies at the University of Ghana, and the Archive has been named after you. What was your motivation when you started collecting music from indigenous communities in Ghana?

J. H. Kwabena Nketia (JHKN), Interviewee – Thank you very much for this splendid opportunity to talk about heritage. UNESCO needs to be applauded for this initiative. I have always been interested in music and the traditional arts, and the stories behind them, and at a certain point in my life I had the opportunity of studying those kinds of materials, not only at home, but abroad. It seemed to me that my job was really to go into the business of collecting and systematizing what we have in Ghana, and later on also what we have in adjoining countries. And perhaps as a final objective, I would write the monograph, *The Music of Africa* (1974), because those collections give us some idea of the principles by which our traditional people have created their music. To move forward, we need to know our foundation and where we want to go in terms of our experience. So this is roughly what has guided me. I come from a traditional background where tradition was important. I was a child of non-literate and non-Christian parents, but I had the opportunity of going to school.

So it seemed to me that I should supplement what the school offered with what I found in my own traditional society. In other words I kept up my traditional upbringing, and tried to learn about it and to share it, so that all of us who are in modern Ghana can appreciate our own traditions and how they can be developed and matched with the new traditions that are coming to us from various countries, so we can move forward as an independent country with our own and enlarged tradition in contemporary times. I wasn't really among the class of people who have some western upbringing before they find their own culture, and so that enabled me to take up my traditional things seriously, but at the same time look at the new things that had come to us from the West because there is a way of enriching your experience when you borrow relevant things from other cultures and enhance and improve your own.

JOB: Let's go back to history. How were you able to capture all these traditions, especially looking at the kind of traditional background you are talking about?

JHKN: Well, in the early days there was no recording equipment, nothing of the sort we have now, so you had to go to your teachers, parents, grandparents, and others in the tradition to learn from them; and so I did. My first attempt was provoked by a statement that the late Ephraim Amu[3] made about going to the traditional people to learn from them. When I was in the teachers' training college at Akropong,[4] he saw me performing on the harmonium, imitating his compositional style. At the end of it he came to me and said, "Young man, I gather you're interested in music," and I beamed with a smile and said, "Yes." And then he said, "Don't copy my music! Go to the traditional people and learn our traditional music from them, because that is how I started." So that was the best intellectual advice for a young person, but it was stimulating. So I went back to my hometown, but it was now the opportunity to look at that traditional background from another angle, from the angle of a boy who was going to school, learning about cultures and so forth, and who must be interested in his own culture. So that was the stimulus, and I started learning Adowa[5] songs and so forth from my traditional people in Mampong Ashanti.

What impressed me most were my teachers in the traditional setup, especially the Adowa queen mother, Dede Ama Tanowaa, who taught me about the Adowa repertoire and the tricks about Adowa. She was in charge of the Adowa group, and I must say that although she was non-literate, she was very intelligent and she would tell me about the structure of the song. She sings and tells me, "You know, this is the 'call' ('*ɔfre*') and this is the 'response' ('*nnyesoɔ*'); when the soloist interrupts, it is called (*'ntumu'*), and when she sings a part on top of the chorus, it is (*'ntosoɔ'*)." So it meant that this old lady who was non-literate was an intellectual because she was aware of the formal structure of the music. In other words, she had a certain sensitivity about the form and the theoretical structure, what we call the theoretical knowledge that we apply today. We all think that our non-literates probably do not dabble in intellectual things, but she was very systematic. It was all unwritten in her head, and I felt that my job now was to codify this, to bring this to our attention so we know exactly what our traditional people do. It is therefore our job to learn to sing the songs, and if possible to go beyond that and learn how to create new songs. Now in songs you are

3 Ephraim Amu, born on 13th September, 1899 and died on 2nd January, 1995, was a renowned Ghanaian composer, musicologist and teacher.

4 Akropong is the capital city of the Akwapim Traditional Area. It is located in the Eastern Region of Ghana, and in the Akwapim mountainous terrain, about 30 miles from Accra, the capital city of Ghana (Kwakwaduam Association Inc., 2013). It has a 2013 settlement population of 13,785 people.

5 Adowa is a social dance performed at funerals and also during joyful occasions. It has grace of movements of the diminutive antelope after which it is named (Opoku & Bell, 1965).

dealing with not only the music but also the language, the text, so you have a double task of knowing the language, how it works, and then the music, how you convert this into song. I was keen on seeking more knowledge on this "story" and not "losing it", as UNESCO has it on today's theme.

There is a lot to learn from traditional people in terms of the structure of our traditional music, the words and all the other fine aspects of how you perform as a group, with a leader and the chorus and so forth. It was the intellectual knowledge behind this traditional thing that I had to discover in order to share this with my colleagues or with other people, and so this is the essence of what we describe now as musicology, knowing how the music is organized, its history, and so forth. We do all these things in our traditions but we don't talk about our music, we don't write; instead, we memorize the music and we perform and enjoy. What was missing was the literacy aspect, so my job then was to bring some literacy so that the songs are available in written form, and then we learn how to sing them. Even just getting the text without the music was very important, because you can enjoy what the text says in terms of what we now describe as literature. In other words, oral literature was treated as something that you think about and say in song, and not in writing because we hadn't developed writing for it.

JOB: Thank you Professor. How much is lost in the process of recording this information like you did, given that we did not have the recording devices?

JHKN: Well this is when the invention of recording machines becomes important for us. Because, if I go there and learn to sing it, I can only share it when I sing it, but If I record it I can also play it for others to listen to and enjoy. So the recording thing came as an aide memoire, something that was enabling us to record our traditions or stories so we can listen back and enjoy them, so we can listen and discover how they were structured, so we can listen to them and see the topics that we dealt with, so we can listen and see how interpersonal relationships were ordered in traditional society and so forth. So, this becomes your oral literature of the people which they developed, which they don't write down, but convey orally in songs and speeches.

JOB: Professor Nketia, you have extensively documented Ghanaian musical traditions from the ten regions of Ghana as well as music from some African countries. When and how did you start this fieldwork documentation?

JHKN: Well, it all started in 1952, when Professor Kofi Abrefa Busia[6], the head of the department of Sociology at the University of Ghana, decided to give me a research fellowship in sociology to study music. That was an exciting kind of departure, and from then I had my team. He made sure we had a car, a driver, a technician from the Ghana Broadcasting Corporation (the only broadcasting institution at the time) who handled the tape recorder, and an assistant in the field to help with interpretation and so forth. So the idea of being here at the University of Ghana and then traveling to various places in the country, to enjoy the music, but also record and bring it back with my team, started during Professor Busia's tenure. Thus we had a model kind of archival collection. This collection covered all ten regions of Ghana. Now a collection is just a collection, but it becomes a proper archival thing when it is properly organized and made available for research and entertainment.

6 Kofi Abrefa Busia (1913–1978) was the first lecturer in African Studies and the first African to occupy a Chair at the University of Gold Coast, now University of Ghana. He later became the Prime Minister of Ghana, from 1969 to 1972 (Modern Ghana, 2006).

JOB: So when you had the support from Professor Busia to carry out this documentation project, did you initially plan to cover all Ghanaian regional traditions?

JHKN: The initial idea was to cover some traditions, but then the interest grew, so the bigger idea was to cover as many traditions as possible from all the regions of Ghana so that we have the whole of Ghana's traditions in one place. In other words, the idea was to cover the entire country so that we use the archive to bridge ethnicities or cultures in Ghana—in a more appropriate sense, to unify the nation, so that someone from the Dagomba[7] tribe, for example, can come to the archive and learn about 'Agbadza', an Ewe[8] dance from the Volta region and vice-versa. The issue is, how can you develop a school system that is always singing *God Save the Queen* or *Baa Baa Black Sheep,* and not singing African songs, if you don't provide them with the materials that our forefathers were using? How can you improve on that? And that is the challenge.
And so the archive now becomes a very important, strategic thing for us in terms of music and its development in Ghana, because when you know the various traditions and you are a composer, you don't compose only in your own traditions; you can compose in other traditions. That is what has been developed since Busia paved the way. Kwame Nkrumah supported this initiative in his time, it became fashionable for all of us to learn the music of other tribes. I refer to this as "bridging cultures and unifying the nation."

JOB: How do you feel, knowing that the materials you collected in the early 1950s and donated to the Institute of African Studies archives are being useful?

JHKN: I am pleased that the University of Ghana has named this important facility after me. The point I want to make is that the archive is a very important source for development. The materials are there, but unless we have creative minds looking at how the materials may be used, they may lie there forever, and not be useful. So the stimulus to find out how our people were doing this in the past and how we could do it in the present defined the idea of making sure that even though we have several tribes, so to speak, we have different musical idioms, and that as a nation we can be familiar with the music of all our societies and that we can even perform their music. That becomes a challenge. But, we can't do it without the archive, without the materials, and we can't do it without the people in the archive systemizing what is there. And, we can't do it without scholars being interested in systemizing the knowledge and creating new works embodying the tradition. So that makes the archive a very important thing in the evolution of tradition and style, and in terms of nation building. Fortunately, my research did not cover only Ghana, but other parts of Africa.

JOB: Generally, would you highlight the role archives should play in preserving "our stories" so that we don't "lose them"?

7 Dagombas are the second largest of the 54 ethnic groups in Ghana.
8 The Ewe occupy southeastern Ghana and the Southern Parts of neighboring Togo and Benin.

JHKN: An archive is a backbone to culture and development, a backbone to education, a backbone even for philosophers, because you can learn about how your ancestors and other people were living and thinking. So the archive has become very important; preserving this for the country and for people who are curious to know their past, and to make good use of their past in the present is highly essential. For example, if you are a popular musician, we want the little thing that will make people dance; if you're another type of musician, maybe a church musician, we will want something that will make people contemplate. But with the archive, whatever your intentions are, you will find something that relates to what culture does and provides in the country.

Our heritage is our story. Audiovisual heritage materials are our stories. Besides the written records, the films, musical recordings, and oral histories that have been captured in the 1930s, 1940s, 1950s, 1960s, and so on, on magnetic or digital formats as we have today, tell our story—the story about who we are and how we have developed or progressed as a nation or, generally put, as a global village.

JOB: What is the way forward?

JHKN: Well, the way forward is just what has begun here and in other countries. Setting up a proper archive and knowing that it is storing our field recordings and other commercial materials, but not only just storing, but making it possible for people from far and near to access them for application is what I am talking about. And I always insist on responsible access; by this, I mean creative and responsible use of the materials that have been collected by responsible and considerate people.

Another point I want to make is that the archive curators or archivists have a huge responsibility of making the archive known to the public. They must devise creative ways to advertise the "super stories" they are preserving. The archivists must try to educate people about their collection and convince people that they will find something good there. For example, those in the music field who are trying to create new music must be able to access the old music from the archives to enhance their new creation. Even politicians need to consult the archive to learn from the old order and improve on it. Lastly, I would say that we should appreciate archives and make good use of them, no matter our backgrounds, because we would get to understand ourselves better.

JOB: Thank you very much Professor Nketia for your time and the insights you have given us.

JHKN: The pleasure is mine.

4. Acknowledgements

The 96 year old interviewee is highly commended for making time to come to the Institute of African Studies to join in the Celebration of the WDAVH for these views to be gathered from him, and also to open his doors for the interviewer to come to his house for additional discussion. Secondly, I say big thanks to Ms. Rebecca Asseh for partly helping with the transcription of the interview. My colleague, Dr. Edem Addotey, of the Institute of African Studies, University of Ghana, deserves special thanks; two of the questions I asked Nketia were created by him. Professor Kofi Agawu of Princeton University in the US helped greatly by looking through the paper to make sure everything was well in place.

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INTERVIEW WITH ROBYN HOLMES 2016 ASRA AWARD RECIPIENT: SOUND IS MY PASSION

Melinda Barrie, University of Melbourne Archives, Australia

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In 2016, Australian academic and musicologist Robyn Holmes received the Australasian Sound Recordings Association ASRA Award for excellence in the documentation and the dissemination of Australian music. Robyn talks to ASRA Board Member, Melinda Barrie, about her long and varied career in the field of music performance, teaching, and online distribution of Australia's sound culture. She recalls her diverse interest in sound from the classical to new music, and how she has never forgotten her first day of teaching when an audio cassette - which was relatively new technology at the time - unravelled itself and she had to revert to using vinyl records. However, it was not long after this early experience that Robyn recognised the potential of audio recordings and the power of collections in teaching and learning. It is these early interactions with analogue sound media which can be credited with stimulating her lifelong passion and advocacy for Australia's recorded sound heritage.

Melinda Barrie (MB): How did you get your start in the industry and what are your career interests?

Robyn Holmes (RH): I started my career as a performer and musicologist. I was a pianist and training as a singer with Professor David Galliver at the University of Adelaide. However, I think he quickly realised that I had more to bring to music by being a conductor than as a virtuosic diva, so he threw me the baton and so began my career in conducting. So from that moment on in terms of performance I focussed on conducting singers and choirs. In terms of my career I ended up doing honours in musicology and began teaching at the University in the following year. I guess you could call me a music academic who was teaching music history and theory.

During my early days at the university in the late 1960s, I was primarily immersed in the world of classical music and at the same time I was also surrounded by some important pioneers in electronic music in Australia. Firstly by Peter Tahourdin who came from Britain to Adelaide to set up the first electronic music studio in Australia. Later when Tahourdin took up a post at the University of Melbourne in 1974, he was replaced by Tristram Cary, also British. I worked closely with Cary during my honours year and although I was not a student of electronic music, I was keen and very interested in what they were doing. At the time Cary premiered a big electronic sound work where Don Dunstan was the narrator. Cary later became an important pioneering figure in Australian electronic music.

MB: You were introduced to many musical influences during your formative years at the University of Adelaide.

RH: From the early days of my career I was involved with professional music organisations like the Australian Society for Music Education, the Musicological Society of Australia, the Australian Society for Music Education, the Musicological Society of Australia and of course later, the International Association of Music Librarians (IAML) Australia and then the Australasian Sound Recordings Association (ASRA). So in the beginning at university, I was engaged with organisations that really networked me to those really important people, such as Don Banks, who contributed to the historic development of music in Australia. I felt like I was really exposed to some really interesting people and ideas about sound.

We were constantly performing new music and commissioning new music, so we were sort of constantly engaged with what was going on - particularly through the Adelaide Festival. One year Benjamin Britten came to the festival. I remember well his performance in this darkened space surrounded by these enormous speakers, which blasted out sound to every corner of the auditorium. It was an extraordinary experience.

Sound was a part of the world in which I lived. It was as simple as that.

MB: Can you talk about your early experience of teaching music?

RH: You have to keep in mind when I started teaching my first class was on the history of music. At this time the audio cassette had revolutionised the classroom—you could actually put samples together quickly in your home studio. Using vinyl records in the learning environment had become redundant, almost… For my first class I had a beautifully prepared sample set ready for the students to listen to—unfortunately for me this new technology failed and the machine promptly 'chewed' up my cassette. It was a most horrendous experience for my first tutorial that I will never forget.

So I learnt from that experience and ended up playing from old vinyl records for my classes, which defeated the purpose of adapting to the new audio cassette technology. Just as well the University had a vast vinyl record collection. I recall walking along the aisles in the vast repository and saying to the music librarian 'How will I ever know this music?' and he said, 'Don't worry, you have your whole life ahead of you'. So I took heart from that and got on with the business of learning through teaching. I was at the University of Adelaide until 1989/1990.

My life was full of musical riches while in Adelaide. I worked with various choral societies using an eclectic and diverse repertoire. At this time I was involved in research projects such as a collaborative music project with the State Opera of South Australia to celebrate the 150th anniversary of the foundation of the opera from 1836 to the present. It was a big project that involved a team of volunteers who worked with old fashioned cards and indexes. It was the pre-TROVE era.

MB: The effort involved in using indexes and cards to find individuals connected to the opera from 1836 onwards would have been both challenging and rewarding.

RH: It was very, very challenging and the thing about this project was that we were collecting as we were documenting. So, as we were doing the work, we were actually building an archive which eventually went to the performing arts museum and performing arts collection at the Festival Centre.

It is at this point I should tell the story of the 'two Robyn Smiths'. My name at the time when I began my career was Robyn Smith pre-marriage, until I changed my name at twenty-one when I got married. But the other Robyn Smith was exactly five years ahead of me at school. We have a bit of a Robyn Smith club privately, and that Robyn Smith went on to become Robyn Archer. Our paths continued to cross via opera- Robyn performed in those first New Opera shows during the 1970s in South Australia. New Opera was the first of the professional state companies that was set up by former South Australian Premier and Minister for the Arts Don Dunstan. Anyway, the upshot of all of this was I worked in Adelaide professionally for 15 years in music. I then got the job as Head of Department of Literature and Materials of Music at the Canberra School of Music in 1990, which had just amalgamated

with the Australian National University (ANU). It was through this position that I became a graduate convenor and I set up research programs and became an academic subdean. My main focus was to develop the curriculum and advance the educational and research profile of the school.

MB: So it was your work with the State Opera project that inspired your advocacy for Australia's musical heritage and primary sources.

RH: Yes it was the State Opera project that helped me understand the power of original material. It was through this project that I learnt about building an archive and this experience enabled me to learn on the job with no specific training in the area. So, when I came to ANU I discovered these fantastic institutions, which included the National Library of Australia (NLA) and the National Film and Sound Archive of Australia (NFSA). It was my proximity to our national collecting institutions which presented me with the opportunity to work collaboratively with them, and produce research programs for ANU that were unique to Canberra.

The school had an important role to play in the development of Australian music in bringing performers and composers together. During my time at the school, the Director John Painter initiated a large Bicentennial project to produce an Anthology of Australian Music on disc. This body of recorded sound still stands testament to the school's guiding principles to support the interaction between composition and musicology across a number of genres. Many will remember this box set. Later, I co-ordinated a collaboration between the NFSA, the Australian Music Centre (AMC) and ANU, using Australian Research Council (ARC) money to produce subsequent series of anthologies, forty-two discs in total.

MB: This project heralded a huge step forward in the recognition of Australian music.

RH: Yes it absolutely did. The anthology was a big sweeping project which brought together researchers, performers and composers to bring out discs of Australian music; and it was a pioneering project because it was the first time the school of music – in fact, many people from the music scene and music academy, had actually got research council funding for their projects, so that was really, really important. It really inspired collaboration.

Jeff Brownrigg, at NFSA, and I started working together. We started a teaching program about archival research methodology using the National Library and National Film and Sound Archive collections. So we built that into all of our honours and graduate programs which we were developing at the same time. I became the Dean of the graduate program in Music and Electronic Arts. So we had a kind of a terrific network of people and collaborators that we could gather together. So anyway, as a result of that, I started to put together an even bigger collaboration that was called the National Network Facility for Research in Australian Music (NFRAM). The partners were ANU who was the lead organisation, NLA, AMC, NFSA, Monash University and La Trobe University. So, we put together this six partner collaboration and got the largest grant ever at that time in music or the humanities for conducting a research program to develop an infrastructure and build that network. I really started to understand the power of big data, technology, and archives and the new possibilities for access to researchers. One of the realisations that came out of all this work for me was how little Australian music was promoted in this country and how fragmented the resources were across Australia.

MB: What are your thoughts on what the drivers of change were that pushed the idea of a network for music forward?

RH: My generation learnt music from scores and we were taught a whole set of skills to read scores, to hear music from scores, and to make music from scores. That was kind of the art that you had. But increasingly that method is giving way to the practice of using the oral world as the primary means of learning.

MB: Interesting shift from text to sound based learning.

RH: Yes. As a classically trained musician I had not understood just how influential the popular music industry was, and the impact the developing recording technologies could have on teaching and learning. This shift from score to sound really gained momentum during the 1960s. So, my interest turned to looking at ways in which we could build the relationship between context and link the score and sound together. It was this idea that we were experimenting with in constructing the national network facility.

By the end of the 1990s, the NLA approached me and asked me to come and lead their national reference group to consider what needed to be done for music within the big collecting institutions, both national and state, in order to improve access. I led this reference group and we targeted people from around Australia to represent the different sectors which included the libraries, archives and music organisations and brought them all together for a 'think tank'. The reference group developed the Australian bibliographic network which later became Libraries Australia.

MB: Did this project have an impact on collecting and cataloguing?

RH: As a result of this national reference project the NLA moved away from big collecting during the 1990s to put more resource into its cataloguing. This change of direction was based on the realisation about the size of the backlog and that few of their wonderful collections were controlled or accessible. By the end of the 1990s, after years of cataloguing, the library started to look outwards again and think about how to get better exposure for their collections. The library recognised the need for leadership in this area so created the new role of music curator. I successfully secured the position so left ANU and took up my new post at NLA and started on building the collections, which included the acquisition of Peter Sculthorpe, Don Banks and Keith Humble. I also brought my previous experience in 'big picture' management to the role and focussed my efforts on building the library's strategic relationships with its industry partners and stakeholders and promote the collections to a wider audience. It was at this moment that I was introduced to oral history and the sound preservation staff. So suddenly my interest widened from just classical music.

Up until my appointment at NLA I had spent much of my time in music schools learning to make very high level evaluative judgments about music. Whereas when I joined the library, I became more focused on thinking about significance into the future, about the power of music to express culture in the broadest sense and what would still be important in one hundred years. So I really shifted my thinking about music itself by coming to the library.

A project I was involved in at NLA was looking at the question of library infrastructure, which at that time was KINETICA, a bibliographic network that later became Libraries Australia in 2005. In 2001 to 2002 we got permission to start building a pilot online discovery service called Music Australia. It was developed by NLA in partnership with NFSA, AMC, and later with state libraries and the university sector. Its aim was to provide a network

which connected audio recordings, pictures, scores, multimedia and artists websites via a single interface. It included a broad range of genres from the historical to the experimental and soundscapes. During the 2000s NLA hosted both Music Australia and Picture Australia.

MB: You were talking about a broad range of contributors to this project including musicians, composers and artists. Could you explain what their responsibilities were in terms of data creation?

RH: Yes. We provided information on our website specifically for creators to use and help them develop and organise their data to make it interoperable and compliant with our data schema. We designed the system so that when their data was ready for upload we could pick it up from a range of sources.

A big breakthrough moment for Music Australia was the successful integration of score and audio data schemas. Later the library decided to bring all its services together including Picture Australia and Music Australia under a single system which went on to become TROVE. The TROVE model was based on the successful multi format schematic model used by Music Australia, with the exception of access to digitised newspapers. TROVE has gone on to become a powerful and popular tool for research. Its search and refine functionality is excellent. An example of its searching capacity was a search I conducted on Peter Tahourdin's Ragas for a launch I did for his collection in Melbourne.

MB: What do you think the future holds for the preservation of sound and sound itself and Australian music?

RH: Recent developments and improvements in audio technology and its availability has meant that music has become ubiquitous and can be heard everywhere. However, what we have sacrificed to some extent by making it so readily available is the quality of sound. Once upon a time we listened to it live or at home on our hi-fi systems – listening used to be more of an experience. Now we are now living in a world of the low-grade MP3 format and compressed formats that are not at the level you need to get into the deep nuances of the music. The quality of sound on television is poor in relation to the brilliance of the picture. I think there is an imbalance of attention on the visual aspects of movies, gaming, and entertainment, and sound comes a poor second.

Sound is such a vibrant part of the way we experience the world, I just hope the great advantages and facility that we get from the digital is matched by the quality of the actual product.

Sound, and sound quality, is a bit of a life's mission for me. It is my passion!

On behalf of ASRA, many thanks go to Robyn Holmes for her enduring vision and contribution to Australia's sound and audio heritage.

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Interview with Robyn Holmes conducted and recorded by Melinda Barrie on 12 April 2017.

ARCHIVING THE DIGITAL RAI COLLECTION OF TRADITIONAL FOLK CULTURE

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1. RAI Archive of Italian Popular Traditions: The Audio Collection and The Project[1]

> *There are not two distinct stories—that of the people and that of the educated classes; there is only one story. It is the result of continuous cultural exchange, so items of cultivated origin are assimilated into the popular tradition.*
> Diego Carpitella

1.1 Introduction

For twenty years, RAI Teche, the RAI structure of Italian Broadcast that includes all the RAI archives, has been committed to bringing to the attention of an ever-wider public the most representative components of the historical, social, and cultural evolution of our country in its collections.

Figure 1. Two young peasants of Basilicata with their typical costumes.

1 This section of this co-produced paper contributed by Ettore Pacetti.

The activity of recovering and enhancing RAI's audiovisual heritage is taking a fundamental step with the launch of a recovery project devoted specifically to Italian folklore. It is intended to highlight a significant documentary complex of research activity that marks a new era for the study of Italian folk traditions and thus becomes a compulsory passage for any possibility to understand the phenomenon.

From this first step was born the need to create a publication space—a website: http://www.teche.rai.it/archivio-del-folclore-italiano/—that would be a specific reference to a fundamental aspect of Italian cultural identity, and an effective tool for sharing and exchanging funds and resources with other audiovisual archives.

It is of particular importance to note that this collection of ethnic heritage is a consequence of the birth and development of sound and visual reproduction media and is, therefore, intimately linked to the very history of the largest Italian radio and television broadcaster.

1.2 Before the existence of sound mechanical reproduction tools

Documentation of Italian folk music was also made earlier in the late 19th and early 20th centuries by transcribing texts and melodies heard in various geographic areas, especially in Piedmont, Sicily, and Sardinia.

Some scholars began to identify the characteristics of popular art, still completely ignored. It was gradually realized that, alongside art with a story made of physical texts that traced the course of development through the centuries, a popular art survived that, in terms of visual, literary, and musical aspects, was made up of texts and music handed down through oral tradition, in which they still lived with patterns dating back to archaic formulas.

As is well known, the cultured art had a great evolution, made by the succession of different languages that have followed, opposing each other. Often, in the most radical manifestations, they have sought to affirm their supremacy over others by denying the past as a symbol of cultural backwardness and affirming the primacy of the current, which is only able to find the best language because it is more evolved. Popular art, on the other hand, has remained immobile, forced to find in this deliberate refusal of any transformation its ability to survive as an autonomous expression without being overwhelmed by the growing process of cultural unification.

Before the introduction of sound mechanical reproduction tools, the main instrument for the study of oral expression was the transcription. This operation fatally converted a language with its own original code to a style similar to that of the cultural art, eliminating the most characteristic features. The transcription exposed the inconvenience of applying to popular expression, both poetic and musical, concepts and styles typical of Western literature and music. For music, for example, the harmonic structure has become more and more limited to the distinction between major and minor, in the common idea of a predetermined "ethos" of joy for one and sadness for the other.

1.3 The formation of the archive

A formidable enhancement to the survey of oral expression came with the emergence of audiovisual and sound reproduction media. These recording media allowed people to capture the testimonies of popular art, in that originality and immediacy that sanctioned its authenticity.

The fruit of the authentic revolution that these recording devices determined was, outside the Italian borders, the fundamental collection made in the first decades of the last century by Béla Bartók and Zoltán Kodály and devoted to Hungarian folk songs.

Based on these premises and with support from the foundation of the National Center of Popular Studies, RAI has promoted research and collecting of materials through targeted expeditions in all regions of Italy since 1947, favoring sites often excluded from educational and informational flows that circulated in major urban centers.

During these expeditions, the sound documents were recorded directly in the places and contexts of origin, avoiding the transcription that would have inevitably betrayed their authenticity.

Songs, voices, dialects, ways of speaking, and spoken inflections outlined the sound landscape of a peasant society depicted before the advent of industrialization, able to retain, in addition to the original linguistic pattern, the sense of rituals, and the sense of the works and the customs of the past ages through the songs that accompanied them. All this anthropological heritage would have been irretrievably lost if it had not been recorded in sound documents.

These expeditions were organized and directed by the great ethnomusicologist, Diego Carpitella, who engaged other great scholars who were able to combine anthropological research with ethnomusicological research, such as Ernesto De Martino, Giorgio Nataletti, and American folklorist, Alan Lomax. This collection, which has been preserved at RAI and at the National Academy of Santa Cecilia in Rome, contains about 5000 songs that are extremely representative of the various regional realities, and it is still the most impressive and relevant systematic research of Italian ethno-music heritage.

The material was identified by the National Center of Music Studies, founded by RAI Radiotelevisione Italiana and by the National Academy of Santa Cecilia in Rome. RAI funded the initiative and provided all technical means, from cars to recording equipment. The sound documents were always recorded in the places of origin between 1947 and the end of the 1960s, and their content was censored and analyzed with rigorous scientific criteria.

The result of this vast survey is contained in the volume, *Folk. Documenti sonori. Catalogo informativo delle registrazioni musicali originali* edited by RAI ERI in 1977, which lists the music tracks, specifying for each of them the title, location, performer, date of recording, and form or function. The volume will be fully available on the website dedicated to Italian folklore. All documents of the collection were digitized and now are gradually published on the site of RAI Teche.

Figure 2. This photo depicts the rite of funeral weep, widespread in the farmer's world of southern Italy. To honor their dead, women gathered and wept with a special technique. Here the woman weeps in the countryside of Pisticci (Basilicata).

1.4 The historical context of Italy in the mid-1950s

It is important to mention the historical context in which this great collection was formed, and the perspective change of the radio medium compared to the fascist period. In the twenty years of fascism, radio was essentially a means of building consensus. Every aspect of it aimed to give a triumphal and celebratory image of Italy's history and life. Music programming, therefore, was essentially focused on serious and mass music and excluded forms that did not fall into these two genres, and which did not address only medium and high social classes.

The end of the war and the problems of reconstruction completely renewed the media dimension and, above all, the radio that became a tool (a propaganda vehicle) for analyzing the anthropological and cultural aspects of previously ignored social classes.

Figure 3. CUPA CUPA. A popular musical instrument typical of southern Italy made of a container covered with a cloth or membrane and a long and thin cane.

1.5 Project development

In this particular historical moment, in the middle of the last century, RAI began collecting documents of Italian folklore. Today, this heritage becomes accessible to an ever-expanding set of users through a specific area of the RAI Teche site. As far as sound records are concerned, the collection of Carpitella, Lomax, Nataletti is the most important part, but next to it there are other relevant documents. Among them is the radio documentary, *Spedizione in Lucania (Expedition to Lucania)*, by Ernesto De Martino, broadcast in 1953, which describes a trip to one of the poorest and most depressed regions of southern Italy in the middle of the last century to analyze the traditional cultural life of peasant peoples of the region, through the study of songs, dances, poems, and tales.

In addition, there are precious audiovisual testimonials found in the television archive thanks to Daniela Floris's irreplaceable contribution, without whose expertise and passion the project would not have succeeded.

The purpose of RAI Teche is to create a portal[2] devoted to the history of Italian folklore, not only music, powered by the process of finding, archiving, and digitizing audiovisual cultural heritage resources. In this way, it is possible to share these fundamental documents of the history of Italy with an ever-wider and more general audience, formed by different generations and specializations, through a simple and direct discovery system and synthetic, but rigorous, cataloging.

2 The address of the website is: http://www.teche.rai.it/archivio-del-folclore-italiano/ [Accessed 7 January 2018].

2. The Memory of a Country Unveiled in a Radio and Television Archive: The Portal on Folklore and Popular Traditions of RAI Radiotelevisione Italiana[3]

Diego Carpitella has been a pioneer of ethnomusicological research in Italy: one of the first in our country to give credibility to the science and the study of traditional music, and to understand the enormous importance of using recorded sound technology to record oral expression that could, in this way, have the possibility to survive the inevitable progress of the peasant world and of the country's non-dominant cultures.

So, with great interest (Diego Carpitella was my tutor at University La Sapienza in Rome), I started to listen to and to select the recorded materials for the implementation of the first part of this project, in which we are preparing the complete folk recordings of the Carpitella Collection to be published on the Rai Teche Portal.

In 1959, Carpitella was part of the anthropologist team, led by Ernesto De Martino, that went to Salento, Puglia, southern Italy, to collect documents on tarantism, magic, and funeral lamentation, which became the basis of fundamental texts such as *The Land of Remorse: A Study of Southern Italian Tarantism* and *Magic: A Theory from the South*. Ritual weeping always has a codified and ritualized structure. It is a ritual a community has developed to appropriate a natural event, enormous and ineluctable as the death of a relative, and to develop it into a rite that makes it "Culture," or, a human phenomenon manageable by men. The ritual allows the community to overcome what De Martino described as a "crisis of presence."

On our new website for this project, we have a great variety of funeral lamentations[4], not only from Salento, but also from other regions of Italy recorded by other researchers. We have documents (audio tapes and video) about the Salento also related to tarantism. De Martino with his team pointed out that the taranta puncture was nothing more than the stinging of a mythical spider, which sought to find a "cultural" remedy for situations of profound discomfort and difficulty. A reassuring and resolute cure was developed "in-house" as music therapy, with the "pizzica", played by a group composed of organetto, guitar, violin, and tambourine. With this therapy, the time of despair is coded and delimited in a timely manner and as such is tackled and resolved.[5]

The documents in the "Folk" collection are not just music. For example, we have the audio tape of noises and sounds recorded in Galatina on St. Paul's Day, 29 June 1959. Those who thought they were possessed by the tarantula flocked to church to pray and thank the Saint. De Martino in his *The Land of Remorse* explains that the phenomenon of tarantism inside the church, in which music therapy was forbidden, loses every ritual and every "order" to make room for real psychological pathological phenomena.

3 This section of this co-produced paper contributed by Daniela Floris.
4 For example, see: http://www.teche.rai.it/2014/11/archivio-del-folclore-musicale-italiano-basilicata/ and then select document number 54 [Accessed 8 January 2018].
5 See the conversation and recordings documenting tarantism, here: http://www.teche.rai.it/1978/06/possessione-la-taranta-salentina/ [Accessed 8 January 2018].

In this particular document you can listen to screams, shouts, people knocking on the grate that protects the statue of the saint, tunes, thuds, and other attempts to simulate a therapeutic "pizzica" but without musical instruments.[6]

We can also find other sounds of everyday life, for example the bells of the oxen wagon carts in Sardinia, lullabies from all Italian regions, children's songs, narrative songs, or work songs.

In addition to documents from the entire Carpitella collection we decided to include all RAI programs from 1954 to 1980 that have a theme related to folklore or popular traditions. This important research, still in progress, is bringing to light very interesting materials:

- Programs related to the work of the same Diego Carpitella, who appears as a curator or participant in documentary or anthropological background investigations
- Documentaries aired with educational intent, and which today take on the testimony of a country that no longer exists.

In our archives there are also documentaries or programs relating to emigration from campaigns to cities during the era of industrialization; the social conditions of women; the peasantry world; the work of artisans in the pre-industrial age; or even on regions of the pastoral economy, such as Sardinia.[7] We also have documents about ethnic minorities in Italy, and an entire collection dedicated to children's games. All documentaries are important evidence of an Italy that no longer exists or is profoundly changed.

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6 Listen here: http://www.teche.rai.it/2014/11/archivio-del-folclore-musicale-italiano-puglia/ and then select document number 12 [Accessed 8 January 2018].

7 For example, see: http://www.teche.rai.it/1969/02/dentro-la-sardegna-uninchiesta-i-pastori-della-comunita-di-ollolai/ [Accessed 8 January 2018].

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FROM INTERNATIONAL SHORTWAVE TO DIGITAL REBROADCAST: TRANSFORMING MUSIC TIME IN AFRICA FOR A NEW WORLDWIDE AUDIENCE

Paul Conway, Associate Professor, School of Information, University of Michigan, USA
Kelly Askew, Professor, Department of Anthropology, University of Michigan, USA

Radio is the new medium of the 20th century, reinvented over again as new information and communication technologies emerge. Recordings of radio programs, whose value derives from their rarity, uniqueness, and visceral sensory power, are a surprisingly common component of audiovisual archives. Private collectors, national and international broadcasting companies, and community archivists are assembling sizable collections that now have varying degrees of access. When transformed digitally and delivered in new formats and on new platforms, recordings of radio programs have the potential to reshape our understanding of audio [intangible] cultural property in settings where the boundary-spanning nature of information and communication technologies (ICTs) confront the new realities of post colonialism.

This article contextualizes an innovative effort to transform and deliver digitally a forty-year run of radio programs broadcast to the African continent by the Voice of America. The article positions the radio program—*Music Time in Africa*—in the context of international radio in sub-Saharan Africa and summarize the insights of three research literatures that inform approaches to providing access to musical heritage resources recorded under a wide variety of circumstances. The article concludes with a discussion of pro-active archiving through digital "rebroadcasting" as one possible strategy for overcoming the near universal restrictions on online access.

1. International Radio and Africa

Radio is resurgent across the globe, with a particularly strong hold on the African continent. On World Radio Day 2017 (February 13), UNESCO reported that radio is still the most accessible and affordable medium in the 11 African countries it surveyed.[1] In depth field research by Balancing Act, a London consulting firm, estimates that radio reaches 95 percent of the population across the entire African content.[2] The explosive growth of community radio broadcasting and the persistence of international radio broadcasts support the argument that radio never really went away in the face of competition from television and the Internet, but rather has maintained its widespread power to inform and entertain. As broadcast media are transforming from analog to digital and assuming new formats, such as the podcast, radio programming is also beginning to be delivered through social media platforms.[3]

Perhaps far more so than text and visual resources, broadcast radio is most distinctive for its immediacy, its reach, and its potential effectiveness as an ICT. The invention and widespread

1 UNESCO. World Radio Day 2017. Statistics on Radio. http://www.unesco.org/new/en/unesco/events/prizes-and-celebrations/celebrations/international-days/world-radio-day-2013/statistics-on-radio/ "A key feature of African mobile phone use is its convergence with radio listening. Among regular mobile users in Zambia, 33% said they listen to the radio via their handset on a weekly basis, and 25% said they listen on a daily basis. Unlike the use of mobile internet, radio listening is more evenly spread across urban and rural users. However, only 8% of monthly mobile phone users own a mobile phone personally."

2 Balancing Act: Telecoms, Internet and Broadcast in Africa. http://www.balancingact-africa.com/

3 Shaojung Sharon Hong and Junhao Wang. "Voice of America in the Post-Cold War Era: Opportunities and Challenges to External Media Services via New Information and Communication Technology." *International Communication Gazette* 73, no 4 (2011): 350.

distribution of transistor radios—miniaturized, battery or hand-powered, shock resistant, and personally portable—has made it possible since the early 1960s for people of limited means to receive radio broadcasts virtually anywhere. Former head of audience research for the BBC World Service Graham Mytton writes that "here is an example of a technological innovation developed in the West, meeting one kind of demand there, being transferred very successfully to non-industrialised countries and becoming a very significant innovation there—making, perhaps, even more social, cultural, and political impact than in the West from where it came."[4] UK media consultant Mary Myers emphasizes that near universal access to radio signals and devices in Africa (92%–95%)—not yet true for the internet and mobile phones—is a cultural leveling force. "The beauty of radio for the female audience is that, as an affordable, portable, oral/aural medium, it overcomes many of the barriers posed by other ICTs. The advantage of radio for female producers and managers is its relative accessibility in terms of technical specifications and its affordability in terms of initial equipment investment."[5]

2. The Voice of America (VoA) and Music Time in Africa (MTiA)

The audio collection of interest for the project considered here is a major portion of the Leo Sarkisian Archive, which was the working production studio for the oldest continuous broadcast in English by the Voice of America, *Music Time in Africa*. The program began broadcasting in 1965 and is still on the air, now twice weekly (Saturday and Sunday) for two hours per day.[6]

The Voice of America is a US government federal agency, founded within the Department of State less than three months after the United States entered World War II. The agency found its calling—and significant taxpayer funding—as an instrument of US Cold War policy, reaching audiences with news that, quoting its charter, is "accurate, objective, and comprehensive."[7] VoA's parent body since 1953, the United States Information Agency, aspired to make the Voice of America the world's leading international broadcaster. A major part of this strategy in the early 1960s was "to swing a little" by producing livelier and more creative programs in both English and foreign language broadcasts.[8]

In 1963, famed broadcaster Edward R. Murrow recruited recording engineer Leo Sarkisian to create a weekly music program aimed at "bringing African music to Africans."[9] Leo (as he is affectionately and universally known) was born in 1921 to Armenian immigrants who fled genocide in Turkey. Educated as an artist, he is a self-trained ethnomusicologist, polyglot, and WWII veteran. Prior to joining VoA, Leo was a recording engineer for Tempo Records, a production company based in Hollywood, California that specialized in provid-

4 Graham Mytton, "From Saucepan to Dish: Radio and TV in Africa," in *African Broadcast Cultures: Radio in Transition*, eds. Richard Fardon and Graham Furniss (Oxford: James Currey, 2000), 25.

5 Mary Myers, *Gender as a Cross-Cutting Issue*, paper presented to 'Radio Convergence and Development in Africa', September 2009 (updated November 2009), 13. https://www.icafrica.org/en/knowledge-publications/article/radio-convergence-and-development-in-africa-164/.

6 Voice of America. *Music Time in Africa*. http://www.voanews.com/z/1456/about.

7 Ralph A. Uttaro, "The Voices of America in International Radio Propaganda," *Law and Contemporary Problems* 45 (1982): 103-122; see also: Laurien Alexandre, The Voice of America: From Detente to the Reagan Doctrine (Norwood, N.J.: Ablex Pub. Corp., 1988).

8 Alan L. Heil, *Voice of America: A History* (New York: Columbia University Press, 2003).

9 Bitrus Paul Gwamna, *Multi-cultural Programming as a Strategy in Public Diplomacy: Leo Sarkisian, and the Voice of America's 'Music Time in Africa.'* (PhD diss., Ohio University, 1992).

ing local music for use as background sound in movies.[10] Tempo's most famous contribution was the drumming and chanting tracks in *African Queen* (1951), starring Humphrey Bogart and Katherine Hepburn.

Leo had spent the 1950s and into the early 1960s traveling and recording in Afghanistan, Pakistan, and sub-Saharan Africa. Figure 1 is a photograph of recording work in Nigeria in 1965. Substantial documentation exists that Leo secured explicit permission to record and broadcast the music he recorded (Figure 2), but more work needs to be done to broaden the evidence of permissions. Murrow and the State Department charged Leo to create radio stations in newly independent countries in Africa, such as Ghana (independent in 1957), Guinea (1958), and Tanzania (1961) to name but a few, and train local sound recording engineers. He was the first ethnomusicologist to train African sound engineers, making possible African-initiated music archiving that continues to the present time in African radio stations. Leo's field work, his radio program, and his efforts to foster the development of radio stations were intertwined and constituted a critical component of the Voice of America's communication strategy in post-colonial sub-Saharan Africa.

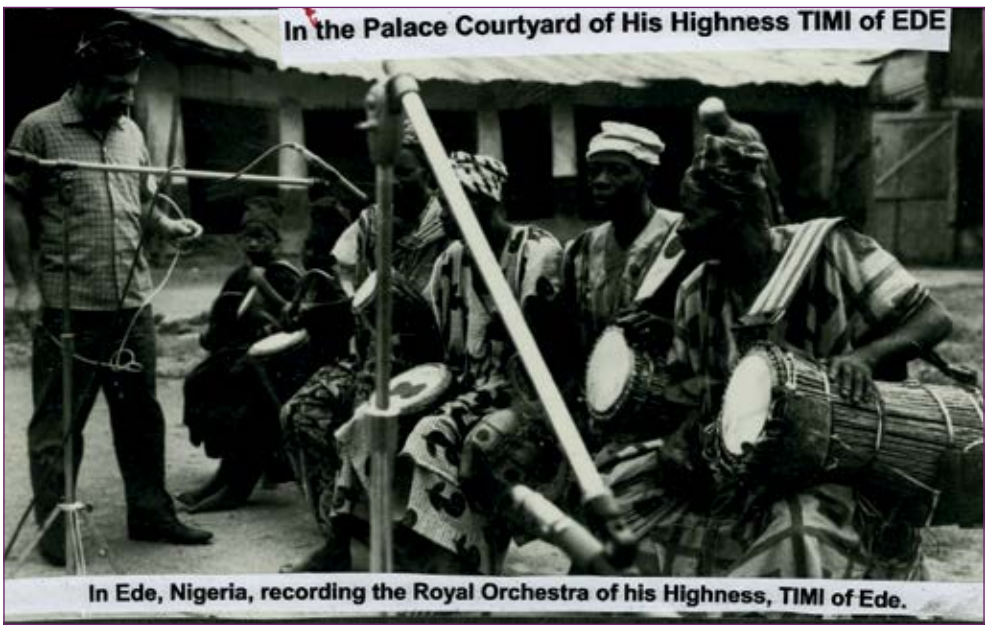
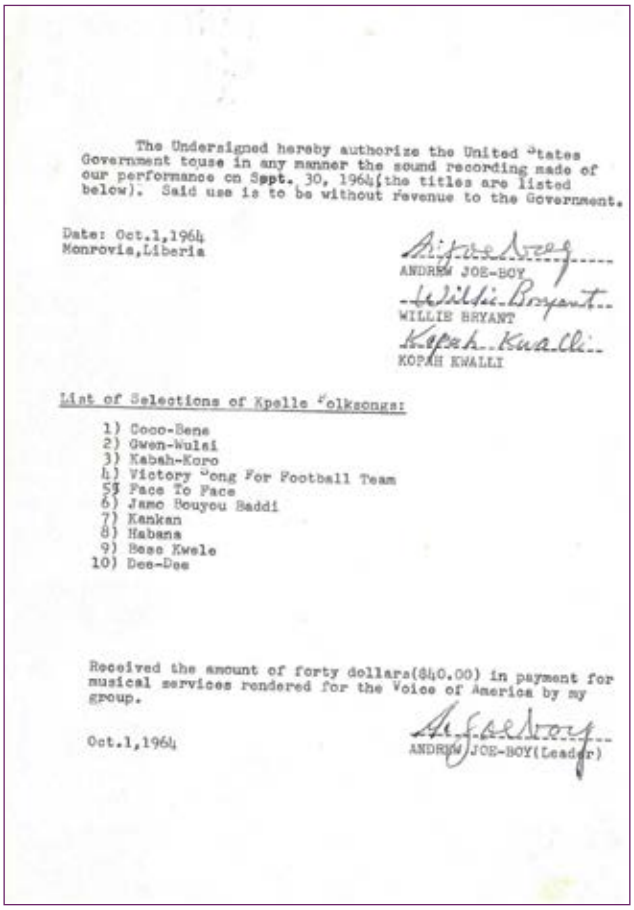


Figure 1. Leo Sarkisian recording TIMI of Ede's drum orchestra in Nigeria, 1965. Source: Leo Sarkisian.

10 Graeme Counsel, "Conserving the Archives of a National Broadcaster in Africa," *Context: Journal of Music Research* 37 (2012): 123.



The Undersigned hereby authorize the United States Government touse in any manner the sound recording made of our performance on Sppt. 30, 1964(the titles are listed below). Said use is to be without revenue to the Government.

Date: Oct.1,1964
Monrovia,Liberia

ANDREW JOE-BOY
WILLIE BRYANT
KOPAH KWALLI

List of Selections of Kpelle Folksongs:

1) Coco-Bene
2) Gwen-Wulai
3) Kabah-Koro
4) Victory Song For Football Team
5) Face To Face
6) Jame Bouyou Baddi
7) Kankan
8) Habana
9) Bese Kwele
10) Dee-Dee

Received the amount of forty dollars($40.00) in payment for musical services rendered for the Voice of America by my group.

Oct.1,1964

ANDREW JOE-BOY(Leader)

Figure 2. Signed permission to record and broadcast, 1964. Source: Voice of America.

Music Time in Africa (MTiA) was first broadcast in May 1965. Production for MTiA began in Liberia's VoA Program Center, then relocated permanently to the VoA headquarters in Washington, DC in 1968, when Leo was appointed Music Director of the Africa Division. He continued regular travel to Africa for field recording through 1985. Leo Sarkisian directed MTiA through his semi-retirement in 2004 and his full retirement in 2012, at the age of 91. In 2012 the Library of Congress inducted Leo Sarkisian's *Music Time in Africa* into the National Registry of Recorded Sound[11] but accessioned only one program into its collection.[12]

11 Jackson Muneza, "Library of Congress Inducts Leo Sarkisian Music Time in Africa recordings into Registry," published on January 23,2014, video, 7:45. https://www.youtube.com/watch?v=xXQcJrbxcG8; Heather Maxwell, "Veteran Music Man Leo Sarkisian Says Goodbye." Posted October 2, 2012. http://blogs.voanews.com/music-time-in-africa/2012/10/02/voas-veteran-music-man-leo-sarkisian-says-goodbye/.

12 *Music Time in Africa: Mauritania*, July 29. 1973 was enshrined alongside Chubby Checker's "The Twist," Simon & Garfunkel's "Sounds of Silence," and Pink Floyd's "Dark Side of the Moon." Library of Congress, National Recording Preservation Board. Recording Registry, 2012. https://www.loc.gov/programs/national-recording-preservation-board/recording-registry/registry-by-induction-years/2012/.

2.1 Putting the show together

For four decades, *Music Time in Africa* was a once-per-week 30-minute program, pre-recorded on Wednesday mornings and broadcast on Sunday evenings (18:30 GMT). The program was timed to attract listeners across sub-Saharan Africa just prior to a major two-hour news broadcast on Sunday evenings, *African Panorama*. The US Congress only recently has allowed VoA broadcasts, including *Music Time in Africa*, to be heard inside the United States.[13]

Music Time in Africa was and continues to be a highly choreographed and fully scripted performance of intertwined words and music. Beginning with the first program, Leo assembled musical selections by stringing together recordings drawn from the extensive collections in the program's music library. Leo worked exclusively with fresh ¼-inch tape, "ripping" selections from 45 rpm singles, 33-1/3 rpm LPs as necessary, or duplicating tapes from his live field recordings or recordings sent to him by radio stations in Africa. Sometimes listener-contributed materials were included, fostering a strong ongoing relationship with local audiences and musicians.

Armed with a 7-inch reel of "cuts" on a theme, Leo wrote and typed a script for the program (Figure 3). Each script weaves together the cuts around a theme and provides contextual information on individual selections. In collaboration with highly skilled sound engineers at VoA's Washington, DC headquarters, the host of *Music Time in Africa* "performed the box" containing a script and a reel of musical selections, timed exactly at 30 minutes (Figure 4). The sonic quality of the narrative program recording was state of the art for an analog recording environment. The resulting tape recordings reflect Leo's skill as a recording engineer and the technical capabilities of Voice of America's broadcasting system.

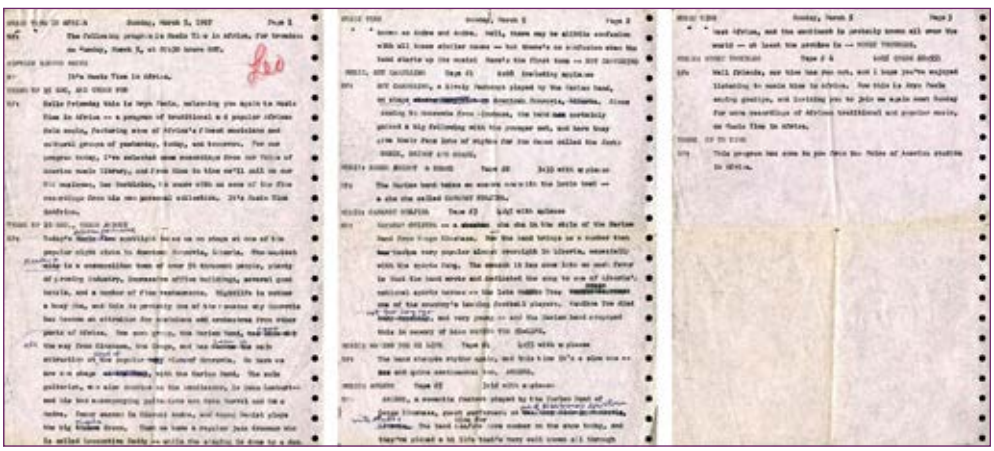


Figure 3. Example of Music Time in Africa script, March 5, 1967. Source: Voice of America.

13 National Defense Authorization Act for the Fiscal Year 2013. Public Law No: 112-239 §178. 2013.

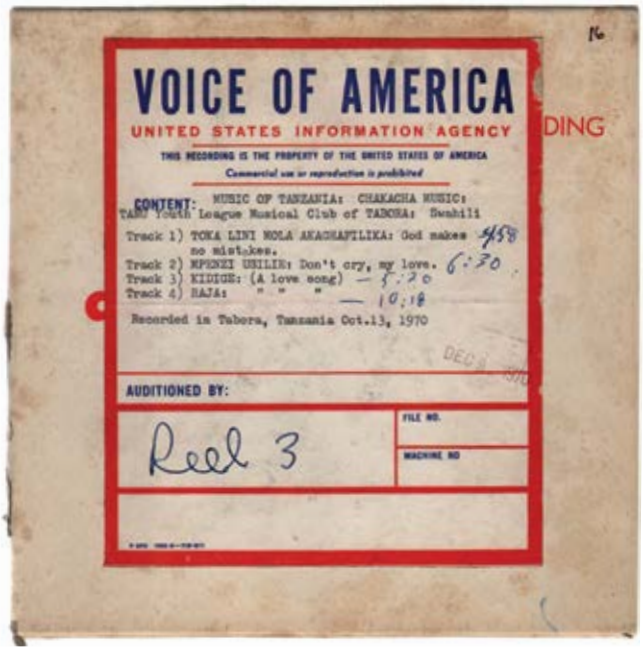


Figure 4. Typical 7" tape box, labeled for Voice of America. Source: Voice of America.

Leo worked with a series of charismatic hosts whose voices became a familiar on-air presence and inspired an outpouring of fan mail (Figure 5):

- Bryn Poole (1965–69), spouse of a VoA station officer in Monrovia, Liberia;
- Susan Moran (1969–1978), VoA staff broadcaster in Washington, DC;
- Rita Rochelle (1978–2005), experienced radio host hired and further trained by Leo;
- Matthew Lavoie (2005–2012), ethnomusicology graduate student of Kelly Askew;
- Heather Maxwell (2012–present), ethnomusicologist trained by Kelly Askew.

Figure 5. Leo Sarkisian and Rita Rochelle in VoA studio, n.d. Source: Voice of America.

Each of these hosts, a number being women of color, projected a personal interest in the listener experience while crediting Leo Sarkisian for the intellectual content. Leo was a regular "guest" on his own program, which afforded him a continuing presence for his listener base and personalized the program around his first-hand knowledge of oral traditions, performing arts, rituals, festive events, traditional knowledge, and craftsmanship, what Noriko Aikawa-Faure defines as the "intangible cultural heritage" of the African continent.[14]

In making musical selections and particularly in crafting the associated program script, Leo Sarkisian exercised tremendous agency over representations of cultural identity, particularly spiritual life, value systems, visions of cosmology, and social practices of peoples and communities. He embodied the "melting pot" mythology of American-style social democracy and sought, in his programming to promote peace and harmony across distinctive and diverse cultures through the cross-fertilization of music, culture, and dance. The show's messaging has been immensely popular, as evidenced by over 500 fan letters that the show received every month; Leo and his wife Mary faithfully responded to most of the letters for four decades, enclosing signed photographs, calendars, and program schedules. Host Rita Rochelle inspired at least one fan club (in Nigeria) and traveled with Leo to Africa in the 1980s. In a 2015 interview with Leo and Mary Sarkisian by the authors, Leo shared that his reluctance to retire from VoA stemmed largely from his loyalty to his listener base and his enjoyment in responding to fan mail. The tradition of listener engagement continues to the present through a Facebook presence exceeding 1 million followers and regular exchanges with fans throughout the African continent.[15]

2.2 Making the Leo Sarkisian Archive

The VOA's Leo Sarkisian Library, named in honor of the founder upon his retirement in 2012 at the age of 91, supported all aspects of the creation, production, and delivery of MTiA, from 1965 to 2007, when the program shifted to a digital format (Figure 6). The transfer of the content of the Leo Sarkisian Library at VoA to the University of Michigan transformed a fixed but previously highly organic music library into the Leo Sarkisian Archive, housed in a campus warehouse in 188 archival storage boxes.

14 Noriko Aikawa-Faure, "Safeguarding the African Intangible Cultural Heritage," in *Preserving the Cultural Heritage of Africa: Crisis or Renaissance?* Ed. Kenji Yoshida & John Mack (James Currey, 2008), 96-103.

15 Facebook: Music Time in Africa – MTIA. https://www.facebook.com/MusicTimeInAfrica/

Figure 6. Tape collection in the Leo Sarkisian Library, Washington DC, 2015. Source: Paul Conway.

The heart of the Leo Sarkisian Archive is 361 reels of field recordings that Leo made himself plus many hundreds more recordings created by the radio broadcasters he trained over a thirty-year period. The Archive may be one of the four most important collections of African musical heritage in existence. The others are the Hugh Tracey collection at the International Library of African Music (ILAM) in Grahamstown, South Africa;[16] the Kwabena Nketia collection at the Institute of African Studies, University of Ghana; and the Gerhard Kubik collection housed privately in Vienna.

The highly curated Sarkisian collection of field recordings, however, exceeds the others in its geographic and musical breadth. More than Tracey or Nketia or Kubik, Leo has embraced the full spectrum of African musical practices. Leo's recordings include not only traditional forms of music, but popular music (ranging from jazz bands to Afro-funk), as well as gospel and African-composed classical music (opera and symphonies). The Sarkisian recordings encompass recordings made by sound engineers he trained across the continent: Radio Tanzania, Radio Comores, Radiodiffusion Nationale Tchadienne (Chad), Radio Dahomey, Radio Rurale (Burkina Faso), Radio Burundi, Radio Douala (Cameroon). Hence the Sarkisian collection is both an individual and collective achievement, begun by one person and then enriched by many others. The collection's value lies, in part, in being a representation of African music that, while catalogued under one individual, preserves the experiences, skills, and choices of many.

The *Music Time in Africa* component of the collection consists of just over 900 discrete recordings from the radio program. The accompanying graphic (Figure 7) shows the distribution of the recordings over the four-decade run (1965–2005) of the original show (excluding the programs developed by hosts Matthew Lavoie and Heather Maxwell). The graph distinguishes the recordings in terms of their completeness for a given date—[platinum=full program + script; gold=full program no script; silver=musical cuts + script;

16 Diane Thram, ed. *For Future Generations: Hugh Tracey and the International Library of African Music* (Grahamstown, South Africa: International Library of African Music, 2010).

bronze=missing elements]. The chart also shows evidence of cannibalization of earlier program recordings for later shows and suggests a high level of "re-broadcasting" of previously developed shows, which is a common practice for programs requiring a weekly program for 52 weeks every year.[17]

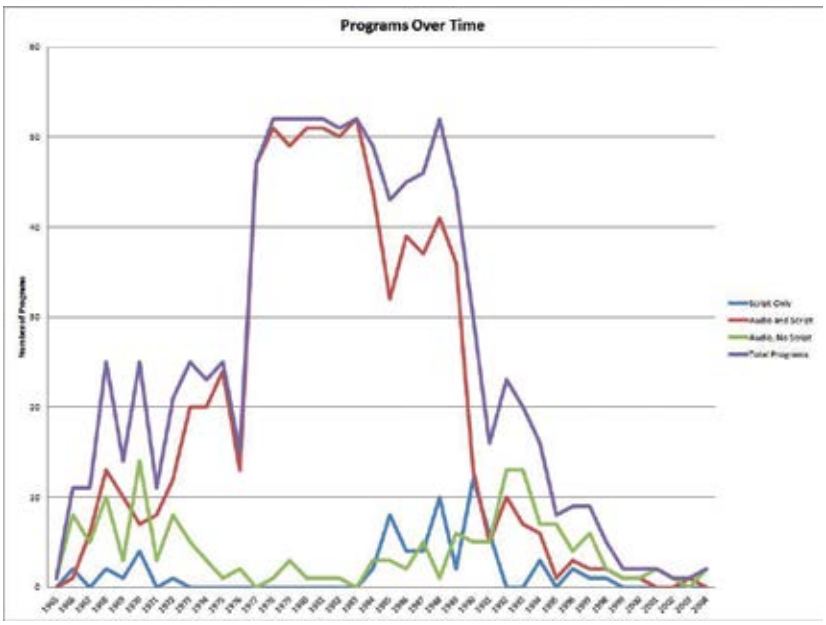


Figure 7. Distribution of programs over time by level of completeness. Source: authors.

3. Ways to Think about Access to Radio and Digital Surrogacy

On the technological level, the digital transformation of radio programs captured on magnetic tape is a "solved problem."[18] But access to the content in an international context is far more theoretically complex. In our effort to find a deeper meaning and therefore greater value in what is essentially a straightforward digital transformation of radio programs, we have drawn on three fairly distinctive research literatures. These three area are: (1) theo-

17 Matthew Lavoie, interviewed by Kelly Askew and Paul Conway, February 15, 2017 and Heather Maxwell, interviewed by Paul Conway, November 10, 2016. Both *Music Time in Africa* announcers described multiple scenarios where VoA would authorize the rebroadcast of a previously broadcast entertainment program, including absence of the host due to planned vacation, illness, and official travel to Africa to record music for the program.

18 For the sound recordings, all of which exist on ¼-inch magnetic tape on 7- or 10-inch reels, digitization has been completed under contract to MediaPreserve in Cranberry Township, Pennsylvania, in full conformance with the standards (International Association of Sound and Audiovisual Archives. IASA Technical Committee, *Guidelines on the Production and Preservation of Digital Audio Objects*, ed. by Kevin Bradley. Second edition 2009. (IASA-TC 04). www.iasa-web.org/tc04/audio-preservation) maintained by the International Association of Sound and Audiovisual Archives (IASA). Digitization produced uncompressed preservation and production masters in EU Broadcast Wave format at 96 kHz/24 bit; access derivatives in medium resolution MP3 format, as well as digital scans of original tape boxes and tape reels. For the scripts, digitization conforms with the standards and best practices promulgated by the US Federal Agencies Digital Guidelines Initiative (Federal Agencies Digital Guidelines Initiative. Still Image Working Group. *Technical Guidelines for Digitizing Cultural Heritage Materials*. September 2016. http://www.digitizationguidelines.gov/guidelines/digitize-technical.html) Each script page is scanned at 300 dpi, 24 bit depth full color. Equipment is calibrated using the GoldenThread targets and software from Image Science Associates.

ries of the post-modern or post-custodial archive; (2) interdisciplinary performance studies; and (3) ongoing work on digital repatriation and the "anthropology of media" proposed by scholars of ethnomusicology.

3.1 Archival agency

A hallmark of archival science theory in the past 25 years is the recognition that an archive is a socio-political construct rather than a neutral source of evidence for understanding the past. Dutch archivist Eric Ketelaar posits the term "archivalization" to describe the "conscious or unconscious choice (determined by social and cultural factors) to consider something worth archiving."[19] For Ketelaar and other post-modern archival theorists, much of the meaning of the archive is in the making and remaking of the archive. The construction of the archive is an exercise of agency through the declaration of archival value, the active intervention by archivists, and in the uses served by the archive over time.[20]

Digital transformation imposes another layer of archival agency by expanding the boundaries imposed by materiality and physical storage to encompass servers and digital storage systems. Thirty years ago, the late Canadian archivist Hugh Taylor presaged the impact of digital processes on the archive. "Once information enters the computer via the keystroke, OCR, or Raster Scan, space and time as an archivist generally understands them are demolished."[21] Paul Conway goes further to demonstrate how the remediation of analog source materials as digital surrogates creates a new archive with its own provenance, new values, and new meaning. In the case of a collection of once-heard radio programs, digital remediation is a particularly powerful act of agency.[22]

Agency as a political act embraces uncertainty and resists false dichotomies (e.g., open/closed; public/private). For South African archival theorist Verne Harris, who has been writing on ethics and the archive for over two decades, opening an archive should often require an ethical leap of faith for the greater good. "A professional acts ethically not when she keeps politics at bay, but when she finds a just politics in action."[23] Ethical access to cultural heritage sound recordings is such a leap of faith: a leap over the Gordian-knotted constrictions of international legal copyright control to action done in tandem with and in conscious respect for the prerogatives of community norms.

While embracing the audiovisual archive as fundamental, South African sound studies scholar Anette Hoffmann is particularly concerned about the multiple layers of selectivity that serve to disassociate sound recordings housed in (often distant) archives from their cultural contexts, in a delocalization process she terms "colonial acousmêtres," or "archiving of what often are fragments of repertoires of a wide variety of genres of orature, from which speakers and singers chose their narratives and songs that were then recorded. These fragments were, much like ethnographic objects in the museum, stored in a way that disconnected

19 Eric Ketelaar, "Tacit Narratives: The Meanings of Archives," *Archival Science* 1, no. 1 (2001): 133.
20 Francis X. Blouin, Jr. and William G. Rosenberg, *Processing the Past: Contesting Authority in History and the Archives* (Oxford: Oxford University Press, 2011).
21 Hugh Taylor, "Transformation in the Archives: Technological Adjustment or Paradigm Shift?" *Archivaria* 25 (Winter 1987-88): 20.
22 Paul Conway, "Digital Transformations and the Archival Nature of Surrogates," *Archival Science* 15, no. 1 (2015): 51-69.
23 Verne Harris, "Ethics and the Archive: 'An Incessant Movement of Recontextualization'," in *Controlling the Past: Documenting Society and Institutions*, ed. Terry Cook (Chicago: Society of American Archivists, 2011), 354.

them from a body of knowledge, or theorising, or poetry (or all of these)."[24] Her work on recordings of African prisoners of war in WWI is a compelling demonstration of the power of reconnecting long-lost voices to their communities of origin.

3.2 Performance and the archive

Radio programming that combines spoken word and musical performances is particularly challenging to make available to wider audiences in part because the voice of the announcer belongs to the broadcaster while the rights of the associated musical content may be far more complex. The vibrant field of performance studies scholarship has much to say about the relationship of an archive of radio programs and the performative aspects of the scripted programs as well as the underlying musical content.

Theater and radio share the embodied ephemerality of live performance, which Stanford University English scholar Peggy Phelan argues is defined in terms of disappearance. "Performance cannot be saved, recorded, documented, or otherwise participate in the circulation of representations of representations: once it does so it becomes something other than performance."[25] Diana Taylor agrees but recognizes the value of surrogate recordings for understanding the nature of performance. "A video of a performance is not the performance, though it often comes to replace the performance as a *thing* in itself."[26] In her foundational work, Taylor notes a rift between the so-called ephemeral repertoire of embodied practice/knowledge (spoken language, song, and dance) and the archive of supposedly enduring materials (i.e., texts, documents, buildings, bones). Exploring the relationships between the two is at the core of performance studies scholarship.

Rebecca Schneider agrees in principle with Taylor but extends Phelan's notion of disappearance to the archive itself. "… The archivable object also becomes itself through disappearance—as it becomes the trace of that which remains when performance (the artist's action) disappears." Hers is a wonderful post-modern view of the archive as subjective ephemeral trace rather than objective evidence, and allows for the acceptance of a recorded performance as "a social performance of retroaction." She continues: "The archive performs the institution of disappearance, with object remains as indices of disappearance."[27] In the context of radio as performance, the insightful work of Taylor and Schneider provides a way of examining in tandem the disappearances of the underlying musical content and cultural context in the creation of a broadcast radio program that exists in ephemeral memory unless embodied as a trace recording.

Georgia Tech media scholar Philip Auslander argues forcefully for greater attention to music in performance studies scholarship, both in the context of music in theater and straight-up musical performances. He embraces recorded music as embodying legitimate performance, extending the concept of repertoire and affect into the realm of recordings of live musical performances and even to the studio work of contemporary popular musicians. "Regardless of the ontological status of recorded music, its phenomenological status for listeners is that

24 Anette Hoffmann, "Introduction" Listening to Sound Archives," Social Dynamics: A Journal of African Studies 41, no. 1 (2015): 79.
25 Peggy Phelan, *Unmarked: The Politics of Performance* (London/New York: Routledge, 1993), 146.
26 Diana Taylor, *The Archive and the Repertoire: Performing Cultural Memory in the Americas* (Durham: Duke University Press, 2003), 20.
27 Rebecca Schneider, "Performance Remains," *Performance Research: A Journal of the Performing Arts* 6, no. 2 (2001): 105.

of a performance unfolding at the time and in the place of listening."[28] Auslander's work over two decades provides grounding for the emergent field of sound studies, which shares with performance studies a critical stance regarding the archival record. He goes so far as to dispute the higher value attached to live performance and the "im-mediate" and contends that "within our mediatized culture, whatever distinction we may have supposed there to be between live and mediatized events is collapsing because live events are increasingly either made to be reproduced or are becoming ever more identical with mediatized ones."[29]

3.3 Digital repatriation

Post-modern notions of archival agency and the archival complexities driving performance studies cross paths in the movement to repatriate tangible evidence of intangible cultural heritage to originating communities. For decades, scholars have recognized and attempted to respond to inequities that surround large collections of sound recordings taken, removed, and "disappeared" from local settings and collected, preserved, and "hidden" in archives far from their originating communities.[30] A deeply troubling inequity is the implications of "spiriting away" the intangible cultural heritage of a local population, often with confusing permissions obtained long ago, where time and distance have created nearly insurmountable barriers to the use of these recordings by local communities.[31] Barriers are further complicated by the "machine dependency" of sound recordings in communities without reliable electricity and ICT infrastructure.

For at least 20 years, scholars who work at the boundaries of anthropology and ethnomusicology in the African context have explored the value and complexity of returning recordings housed in distant or inaccessible archives. Robert Lancefield argues that the act of repatriation is "a vital part of the world-flow of music that are tangible precipitates of once-evanescent sounds still close to people's hearts."[32] Carolyn Landau and Janet Topp Fargion, among others, promote repatriation as an activist stance that both fosters new scholarly research and provides a benefit to the communities from which recordings have been made. "Such approaches to the archiving enterprise can be understood as 'proactive archiving', which is when access to collections is initiated by the archive itself, as opposed to 'reactive archiving' whereby the users of an archive initiate access."[33] Elizabeth Mackinlay goes further in calling for "decolonization" of archival and ethnomusicological engagements in which scholars and archivists "reimagine words such as rights as 'response-ability,' resources and research as 'relationships,' and reconciliation as 'resurgence'."[34]

28 Philip Auslander, "Performance Analysis and Popular Music: A Manifesto," *Contemporary Theatre Review* 14, no. 1 (2004): 5.
29 Philip Auslander, *Liveness: Performance in a Mediatized Culture*, 2nd edition (London and New York: Routledge, 1999), 35.
30 Catherine Grant, "Rethinking Safeguarding: Objections and Responses to Protecting and Promoting Endangered Musical Heritage." *Ethnomusicology Forum* 21, no 1 (2012): 46.
31 Ricardo Punzlan, "Archival Diasporas: A Framework for Understanding the Complexities and Challenges of Dispersed Photographic Collections," *American Archivist* 77, no 2 (2014): 346.
32 Robert C. Lancefield, "Musical Traces' Retraceable Paths: The Repatriation of Recorded Sound," *Journal of Folklore Research* 35, no. 1 (1998): 60.
33 Carolyn Landau and Janet Topp Fargion, "We're all Archivists Now: Towards a More Equitable Ethnomusicology," *Ethnomusicology Forum* 21, no. 2 (2012): 137.
34 Elizabeth Mackinlay, "Decolonization and Applied Ethnomusicology," *The Oxford Handbook of Applied Ethnomusicology* (Oxford University Press, USA, 2015), 396.

Repatriation and pro-active archiving efforts in Africa have taken multiple forms, including the presentation of analog copies of recordings to Ugandan communities,[35] the gifting of original magnetic recordings to communities in South Africa[36] or LP records to Aboriginal communities in Australia.[37] Elizabeth Klesmith notes that one of the most significant barriers to the repatriation of tangible culture, ranging from archaeological artifacts to human remains, is the limited ability of local communities to protect and make use of returned objects, given their dependency on playback machinery.[38]

Archivists and ethnomusicologist are looking to digital technologies to transcend some of the limitations of artifact repatriation. Ricardo Punzalan has advanced a theory of "virtual reunification" that supports the use of digital technologies to reunite dispersed or expropriated cultural collections.[39] Proactive archiving projects have returned digitized radio programs on thumb drives to Haitians devastated by natural disasters that destroyed local radio stations.[40] Noel Lobley, drawing on a mix of digital technologies and performance, has experimented with re-performing the recordings with equipment installed on the backs of donkeys.[41] Similar efforts at combining performance and pro-active archiving have taken place with London's Somalian diaspora.[42] Glenn Patterson's full-circle work with a local community in Quebec, Canada combines the return of historical recording and the gathering of new performances.[43] Although the results are mixed and small-scale, all of these efforts share a desire to return what was once taken, with return involving establishing new, personally direct, and ethically sensitive relationships with local communities.

4. Conclusion—Beyond Digitization to Ethical Access

The *Music Time in Africa* project is a model of a transformative audiovisual digitization project, whereby the value added through digital tools makes new knowledge possible and new ways of connecting audiovisual resources to new communities on a worldwide basis. In the case of *Music Time in Africa* and similar collections of musical heritage recordings, innovation in access is not nearly as straightforward as the technical components. We conclude with our efforts to sort out the ethics of intellectual property and to make connections with local communities—at scale online rather than through personal intervention.

As a federal government agency broadcasting internationally, the Voice of America and all of its organizational units are exempt by statute from the property rules that bind the commercial and private sectors.[44] Setting aside the ethical correctness of such exemptions, VoA need

35 Sylvia Nannyonga-Tamusuza and Andrew N. Weintraub, "The Audible Future: Reimagining the Role of Sound Archives and Sound Repatriation in Uganda," *Ethnomusicology* 56, no. 2 (201)2: 206-233.
36 Thram, *For Future Generations*.
37 Sally Treloyn, Matthew Dembal Martin, and Rona Googninda Charles, "Cultural Precedents for the Repatriation of Legacy Song Records to Communities of Origin," *Australian Aboriginal Studies* 2 (2016): 94.
38 Elizabeth A. Klesmith, "Nigeria and Mali: The Case for Repatriation and Protection of Cultural Heritage in Post-Colonial Africa," *Notre Dame Journal of International & Comparative Law* 4, no 1 (2014): 47–75.
39 Ricardo Punzalan, "Understanding Virtual Reunification," *Library Quarterly* 84, no 3 (2014): 298.
40 Craig Breaden and Laura Wagner, "The Digital Repatriation Audio of the Radio Haiti Archive," paper presented at IASA 2016 Annual Conference, Washington, DC, 25-29 September 2016.
41 Noel Lobley, "Curating sound for future communities," in *Palgrave Handbook of Contemporary Heritage Research*, ed. Emma Waterton and Steve Watson (Palgrave, 2015), 234-247; Noel Lobley, "Taking Xhosa Music out of the Fridge and into the Townships," *Ethnomusicology Forum* 21, no 2 (2012): 181-195.
42 Emma Brinkhurst. "Archives and Access: Reaching Out to the Somali Community of London's King's Cross" *Ethnomusicology Forum*, 21:2 (2012): 243-258.
43 Glenn Patterson, "Digitization, Recirculation and Reciprocity: Proactive Archiving for Community and Memory on the Gaspé Coast and Beyond." *MUSICultures* 41, no 1 (2014): 102-132.
44 National Defense Authorization Act for the Fiscal Year 2013. Public Law No: 112-239 §178. 2013.

not ask permission to broadcast third-party content nor pay royalties to copyright holders. The physical tape recordings made by Leo Sarkisian and his associates are US government property (and labeled as such). The typed and annotated scripts, as well as the spoken segments of the recorded programs spoken by the hosts are in the public domain. So one option for access is to simply invoke the right of rebroadcast specified in recent reauthorizing legislation and ignore the complexities of international and local copyright laws and the transnational music industry that feeds on and profits from this complexity.[45]

But is this the right thing to do, especially in the context of the long history of cultural appropriation that is at the heart of the digital repatriation movement? Ethically, the selections of music included in *Music Time in Africa* broadcasts belong to the original performers and their communities. The ethical challenge of access to this music extends to questions of whether excerpts from longer commercial and non-commercial works can stand alone apart from the textual references in the scripts assembled by Leo Sarkisian. It is unlikely but possible that some of the underlying field music recordings made by Leo Sarkisian have commercial value that could devolve to descendants of the original performers. And yet the passage of time and death from disease and old age has claimed the lives of many African citizens who would likely remember and be able to locate the source of the recordings. Therefore, much of the material included in *Music Time in Africa* is "orphaned" in the ontological, if not the legal sense of the term.[46]

A primary goal of the *Music Time in Africa* project is to explore the feasibility of a performer/community based process of access validation, which we have dubbed *"ethical access."* Our focus is on the prerogatives of performer communities to express their access preferences for the radio programs. Ample evidence exists from fan mail compilations and unpublished internal reports that the VoA radio broadcasts have been a continuing source of pride for musicians and their local communities. A sonic and bodily form of sociality enacted through performance, music binds people into a community, both within and across ethnic lines. Access carries with it a *scholarly responsibility* to engage performers, their descendants, and their communities in a dialogue on their music and its meaning to wider audiences.

The fundamental challenges in repatriating recordings of radio broadcasts is the borderless nature of radio and its reach across borders of all sorts. It may be that the very nature of radio in the digital era may provide the mechanism for community repatriation. For this project the key to our connections with the African continent is active engagement of the vast listener base for the current on-air version of *Music Time in Africa.* This listener base is reached directly through current broadcasting channels as well as through the extensive social media presence that the broadcast enjoys. Through our collaboration with the Voice of America, the project team will work in tandem with the curated social media presence of the current manifestation of the program, including active blogging and a highly popular Facebook presence.[47] Through these channels, we will alert listeners to the project and invite them to visit and engage with the radio programs. Using a variety of standard feedback mechanisms, the project will capture the attention of people who have tuned in to *Music Time in Africa* for decades and invite them to participate in valuing the musical performances that Leo Sarkisian collected for their communities of performers.

45 Reebee Garofalo, "Whose World, What Beta: The Transnational Music Industry, Identity, and Cultural Imperialism" *The World of Music* 35, no 2 (1993): 16-32.

46 Peter B. Hirtle, Emily Hudson and Andrew T. Kenyon, *Copyright and Cultural Institutions: Guidelines for Digitization for U.S. Libraries, Archives, and Museums*. (Ithaca, NY: Cornell University Library, 2009).

47 As if Dec 1, 2017, the official Facebook page for Music Time in Africa logs 1,084,690 followers.

With even limited success implementing a community based "ethical access" process, the project has the potential to reinvent the ways that live field recordings are opened for wider use. Especially in countries that have suffered war and turmoil such as Liberia and Sierra Leone, the rebroadcast of the radio programs through social media will provide direct and persistent access to their musical heritage. And even in countries that have not suffered conflict and mass upheaval, for example Kenya[48] and Tanzania[49], limited capacity to safeguard audio collections in under-resourced public institutions resulted in attrition and loss. Yet access to historical sources of musical production is greatly limited, as is the local capacity of radio stations, ministries of culture, music organizations and universities to preserve their musical heritages.

Since nearly its birth in the early twentieth century, international radio broadcasting has been a powerful tool for governmental organizations, non-profits, and the commercial sector that wish to influence opinion, market products, and affect change in the short and long term behaviors of a listening audience. Short and medium range radio signals recognize no national boundaries—boundaries that in part exist for the economic, political, and social control of the use and reuse of cultural heritage property.

An original radio broadcast is understood to be a profoundly ephemeral performance. For listeners a broadcast exists at a moment in time and then becomes an ethereal memory, notable more for its disappearance and anticipated return than for its affect, which may be socially cumulative rather than instantaneous. A recording of a radio program by either broadcaster or listener, incidental to its initial performance, is an embodied referent, capable of invoking memory or triggering new associations. The chain of radio broadcast, listener experience, and memory is thus highly contingent on the construction of an archive. In the context of historical radio programs, the archive is not simply made accessible to memory but is transformed, materially and conceptually as an agent for "(re)membering" new audiences. An archive of radio broadcasts, created and kept apart from an original listening audience and then digitally transformed, embodies intangible musical cultural heritage made manifest, heard once from a geographically and culturally distant place, decades ago, but that now lives on as residual digital memory.
Auslander, however, would have us reconsider the associations of archival mediatized performances as second-order residual vestiges of a live performance inherently superior in value. Because the musical performances Leo and his counterparts at African radio stations recorded were done so for the purpose of radio broadcast, lines are blurred between liveness and archival artefact. "The im-mediate is not prior to mediation but derives precisely from the mutually defining relationship between the im-mediate and the mediated. Similarly, live performance cannot be said to have ontological or historical priority over mediatization, since liveness was made visible [or audible] only by the possibility of technical reproduction.... Our argument is that the very concept of live performance presupposes that of reproduction—that the live can exist only *within* an economy of reproduction."[50]

48 National Public Radio story on Hugh Tracey's Kenyan recordings: http://www.npr.org/2015/06/28/417462792/in-a-kenyan-village-a-65-year-old-recording-comes-home.
49 See the Tanzania Heritage Project website, an effort seeking to revive and preserve what remains at RTD: http://tanzaniaheritageproject.org/.
50 Auslander 1999: 57; Auslander also makes interesting points about the oxymorons that inhere to concepts of "live broadcast" and "recorded live" (*ibid.*:60), but we'll set that aside for now.

The need to preserve and make available an imperiled audiovisual cultural heritage is the twenty-first century's brittle-books crisis. The interplay of physical, intellectual, and legal constraints is the next challenge to the survival of vital and vast segments of the world's cultural heritage. Without creative innovation in accessibility, audiovisual resources of the second half of the twentieth century face inevitable and catastrophic loss.

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IASA RESEARCH GRANT REPORT: PILOT PROJECT IN RE-STUDY AND REPATRIATION (DIGITAL RETURN) OF THE INTERNATIONAL LIBRARY OF AFRICAN MUSIC'S HUGH TRACEY FIELD RECORDINGS

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1. Introduction

Digital conversion of audio, photographic, and film collections in sound and audiovisual archives for purposes of preservation and accessibility has been the norm in archival practice since the 1990s. As a result, analog to digital conversion of many music heritage collections, such as the field recordings of Hugh Tracey at the International Library of African Music (ILAM) in South Africa, has been accomplished. With funding secured from the Mellon Foundation, Rand Merchant Bank Expressions Fund, South African National Heritage Council (NAC), and National Research Foundation (NRF), the recordings, films, photos, and documents in the Hugh Tracey Collection (hereafter referred to as the Collection) were catalogued and preserved in digital format from 2006–2008. The audio files and 1,000 images in the Collection have been accessible in compressed form via the Internet since late in 2008. Plus, Tracey's well-known *Sound of Africa* and *Music of Africa* LP series are available as CD compilations and as MP3 files from ILAM and various online vendors. Not suprisingly, the many and various opportunities for dissemination digital conversion of field recordings has afforded have brought with them ethical issues for cultural heritage archives which are breifly discussed below.

Prime among these issues is awareness in academe of the need to decolonize ethnographic disciplines such as ethnomusicology, anthropology, and ethnology, and by extension the archived collections of field recordings acquired during the colonial era that are their hallmark. The "Pilot Project in Re-Study and Repatriation (digital return) of the International Library of African Music's Hugh Tracey Field Recordings" was initiated as an effort in that direction, given that Tracey built his archive of thousands of audio recordings and still photos and 18 films from throughout sub Saharan Africa from the 1930s–1960s, at the height of the colonial era. Tracey made sure his recordings were preserved for future generations by establishing the International Library of African Music in 1954 as a research institute and archive devoted to study and publication of knowledge about African music and related art forms. He also disseminated his recordings widely through commercial releases in 78 rpm and LP formats intended to reach local and international markets. Technology of the time did not allow him to give copies of the recordings to the musicians who performed on them; nor did they receive a return from sales, due to recording industry standards of the time. Thus, although only in its infancy of implementation, this Project is intended as a concrete gesture in decolonization of Tracey's archive. Now, 60–70 years after Tracey made his recordings, nearly all of the artists have passed on and most descendants of the artists do not even know the recordings exist, much less that they might serve as a vehicle to sustain their music heritage.

Because they possess recordings of endangered music heritage, an equally important issue for archives is their responsibility to contribute to music sustainability efforts. Although digital conversion may ensure preservation of historic recordings, it does not ensure the continued performance of the music heritage preserved on those recordings. It is possible that the recordings will be preserved for the foreseeable future (provided the digital carriers withstand the test of time); and it is true that the material is more easily and widely accessible to all in digital format via the Internet. But, the reality of low bandwidth, sparse Internet accessibility and no electricity to recharge cell phones, i-pads, or laptops remains for many people in the southern hemisphere, especially in the rural areas where many collections of field recordings were created. This dictates that dissemination also needs to take place in

ways that reach people living without internet access and without electricity because of their remote locations and/or lack of resources as a result of marginalization and poverty.

Given these conditions and the ethical issues surrounding them, several related aims emerged for the Project as follows: to give back digital copies of Tracey's recordings in their source communities to the musicians recorded (if any are still alive) or to their descendants as a gesture of reciprocity, because they are entitled to have them; to give the material to music educators and community musicians in general for sustainability reasons due to the endangered status of many of the music traditions; and to re-study existing metadata at the time of digital return to correct errors and to gain more information.

Widespread changes of the digital age, such as mass migration and effects of global popular culture on younger generations, endanger the sustainability of cultural heritage and therefore musical traditions throughout the world. This makes it urgent for archives to return historic recordings; ideally, directly to culture-bearers. For ILAM, returning the recordings to the communities they came from is possible because Tracey's metadata tells us the locations where the recordings were made and the names of the artists who performed for him. A token monetary return is given to surviving musicians or their descendants, since so many of the recordings were released commercially. In fact, with the early 78 rpm releases, whatever gain there was went to Gallo Recording Company in exchange for Gallo's support for Tracey's field equipment and travel costs**.** It must be acknowledged that Tracey's lifelong mission was to preserve African music for future generations of Africans and to get it into the schools of Africa for the sake of its sustainability. Unfortunately the latter he never managed to accomplish due to lack of funding.

When digital conversion of the Hugh Tracey Collection was accomplished and the recordings made accessible online from ILAM's website in 2008,[1] we finally knew the full extent of the Collection and were in a position to disseminate it as widely as possible. A first gesture was to supply digital copies to national archives in Zambia and Swaziland and to university music departments in Uganda, Kenya, and Tanzania. The Collection was also disseminated through ILAM outreach projects including creation of a travelling museum exhibition (installed in 11 different historical museums throughout South Africa since 2010) and publication of two music education textbooks intended to get the music heritage out of the archive and into communities through the schools. These projects gave the general public, teachers, and school children access to Tracey's field recordings, images, and films; and they have worked to raise awareness of the existence of ILAM and its role, since its inception, to promote knowledge, appreciation, and sustainability of African music.

The first opportunity to carry out digital return to source communities did not materialize until 2014 when, thanks to a request from Tabu Osusa, Director of Ketebul Music, for information needed for a Singing Wells music instrument sustainability project in Uganda, support to launch the Project was offered from the Abubillah Music Foundation.[2] The Project

1 Since late 2008, it is no longer necessary to physically come to ILAM to access the Collection. The online catalogue, with numerous search options, offers metadata and a 30 second audio clip of each Hugh Tracey recording. Digital files of the recordings and the document archive are available from ILAM for research purposes upon request.

2 The Abubillah Music Foundation funds the Singing Wells Project which was established in 2011 by its Director, Jimmy Allen, in collaboration with Tabu Osusa, founding Director of Ketebul Music, an NGO recording studio in Nairobi. The fieldwork, conducted in August 2014, was only possible due to this support. To view numerous outcomes of Singing Wells projects including this one, visit www.singingwells.org.

commenced late July 2014 with fieldwork in Kenya in the Rift Valley (Kipsigis recordings)[3] and in the Lake Victoria region (Luo recordings). The initial fieldwork brought with it realization that effective digital return had to allow for basic problems in rural Africa, such as lack of electricity and lack of playback equipment for CDs or digital files. This presented a very concrete issue not anticipated: the need to offer equipment in cases where people have no electricity and/or means for playback. The solution found in the moment in villages in Kenya was to purchase inexpensive portable radios with USB ports and rechargeable batteries. Giving such devices was necessary in almost all cases of return in rural villages with no electricity in Malawi in May 2016, but in Mombasa and Malindi recipients either had CD players or devices with USB ports to which the recordings could be transferred as MP3s. Unfortunately, often recipients do not have expensive smartphones with adequate storage capacity for large audio files, which means transferring the audio files to cellphones is not a reliable option.

2. Digital Return in Mombasa

Support from an IASA research grant for a second effort of the Project in Kenya covered travel, subsistence, and research assistance costs for implementation in Mombasa and Malindi in February 2016. I carried out digital return (in CD an MP3 format) and re-study of Hugh Tracey's 49 field recordings made in 1950 and 1952 in Mombasa and 28 field recordings made in Malindi in 1950. I was assisted with all logistics of locating descendants of musicians and others to whom the recordings were returned and with documentation of the process by Ketebul Music staff members, photographer Patrick Ondiek, and sound engineer Steve Kivutia, who were part of the team that did the repatriation and restudy of Kipsigis and Luo recordings in 2014 mentioned above. My fieldwork dates were integrated into their busy schedule filming a television documentary on traditional music in Mombasa. Their project dove-tailed well with mine in that the people helping them with the film were able to help with locating local collaborators. The mini-van and driver hired for the Ketebul film project was provided for our considerable transport needs. The transport and the help from Steve and Patrick was gratis thanks to the generosity of Ketebul's Director, Tabu Osusa.

Preliminary work done in advance of the actual fieldwork was as follows. Steve and Patrick were sent MP3s of the Mombasa and Malindi recordings and PDFs of the soft bound field notebooks for each location containing track lists of the recordings (2 CDs, Mombasa; 1 CD, Malindi) and scans of Tracey's fieldcards inscribed at the time he made the recordings. Names and addresses of the musicians, their language, instruments played, translations of song lyrics, the location where each of the songs was recorded and miscellaneous comments are given on each fieldcard. The CDs and notebooks were compiled at ILAM by ILAM's sound engineer, Elijah Madiba and his assistant, Jason Speckman under my supervision. The metadata in the field notebooks provided Steve and Patrick with essential information about locations and names of musicians recorded to use for their preliminary work. They also found assistants with connections to local music to help locate descendants of the musicians Tracey recorded.

3 Go to https://www.youtube.com/watch?v=Gi8xeDrsQTs&feature=youtu.be to view a brief documentary video produced by Singing Wells regarding the digital return and re-study of Tracey's Kipsigis recording "Chemirocha" about the American singer, Jimmy Rodgers that was a hit in the 1950s.

Mr Mbarak Ali Haji, composer and leader of Lalelele Orchestra, Mombasa's only remaining taarab orchestra and Mzee Swaleh Mwatela, a respected Mijikenda musician and teacher were secured as our research collaborators for Mombasa. For Malindi our collaborator was Mr Said Mwahui, brother of Mzee Mwatela. Their role was to locate people to return the recordings to and accompany us when we made contact with those people.

The work began in Mombasa where Tracey recorded 6 songs by the Jawhara Taarab Orchestra on 25 May 1952. Mbarak Ali Haji located three men with ties to the orchestra: Ahmad Chaka, son of Nasor Khalfan who was a composer and singer who also played violin, oud, and bass guitar with the orchestra; Salim Khamis who started playing accordion and oud with Jawhara Orchestra in 1956 (four years after Tracey made the recordings); and Hamid Abdalla, nephew of the orchestra's clarinet player whose name was Badi Hemed. It was pre-arranged for us to pick up Mbarak and then the three men he had located to assist us. A group interview session was spent listening to the recordings from Steve's laptop and then looking at Tracey's several photos of the Jawhara Orchestra on Steve's I-Pad. Tracey's field cards for the 6 recordings list the instruments played, the name of the orchestra's leader, and names of three singers, one of whom was Nasor Khalfan whose son, Ahmad Chaka, was present with us. The other instrumentalists are not named. It was exciting that they were able to identify all but one of the orchestra members. Identifying the musicians in the photographs of the Jawhara Orchestra adds valuable historical information to the documentation created by Tracey back in 1952. Ahmad Chaka was moved to tears and held his hands over his heart when he heard his father's voice on the recordings.

Figure 1. Jawhara Taarab Orchestra photographed in Mombasa, 25 May 1952. International Library of African Music (ILAM) photo, used with permission.

A nearly immediate outcome of giving the recordings to Mbarak Ali Haji was that the 6 songs recorded by Tracey were rehearsed by his Lalelele Orchestra and performed on 26 March 2016 at the Malindi International Cultural Festival. This was only a month after the recordings were returned to the orchestra's leader—clear evidence of how return to source com-

munities promotes sustainability of the music heritage involved. Mbarak could not tell me often enough how important these recordings are to him because Mombasa taarab is unique from Zanzibari taarab and it is dying out. He is devoting himself to keeping the tradition alive with his orchestra; the recordings from the Tracey Collection gave him and his orchestra the opportunity to hear how the music was played in 1952, in the Mombasa style. Several copies of the two CDs of Mombasa recordings were given to Mbarak, and one set to each of the other men who assisted. They were all given permission to make additional copies for anyone with an interest in the music.

Two additional encounters for the Mombasa recordings were arranged by our other assistant for Mombasa, Swaleh Mwatela. He first took us to meet with the family of the late Paul Mwachupa (famous singer, songwriter, guitarist) in Mazeras Village, approximately 20 kilometers west of Mombasa and then back into Mombasa to meet at a street café with an elder musician, Mr Omari Kaka (b. 1935), who has been a drummer for the *kimungwe* dance of the Majikenda/Giriyama since 1955. Tracey recorded two dances, *juba* and *kimungwe*, on 16 October 1950 in Mombasa. These dances originate from the Malindi district. Mr Kaka told us the dances are performed for weddings and funerals as entertainment, and explained that there are only two songs for the *kimungwe* dance. Drummers use two *mushondo* drums, one tall, the other shorter, and a metal plate called *debe*, played with sticks, that keeps the rhythm for the dance. There are still some villages where people do traditional Giriyama dances and the dance groups are brought to perform at culture festivals. During the playback of the dance songs Swaleh Mwatela was clapping the rhythms and singing along. His brother, Mwahui, told us about additional lyrics for the *juba* dance song not translated by Tracey that tell about how the Kenyan army fought the Germans in WWII.

In the meeting with Paul Mwachupa's family we listened to five songs by the Rhythm Experts Band, a trio of guitar, drums, and saxophone led by Joseph Silasi, Tracey recorded on 15 October 1950. They include two versions of a Paul Mwachupa song entitled *"Mapenzi ya kwetu sisi"* (trans. Our Love). On his return trip in 1952 Tracey recorded six songs performed by Paul Mwachupa with a fellow guitarist, Henry Timothy on 25 May. One of the six was Mwachupa's hit song entitled "*Ajali Haikingiki*" (trans. "You can never avoid an accident"). It tells the story of a tragic drowning accident when a truck carrying passengers celebrating a wedding ran over the ramp and plunged into deep water at a ferry landing in Mombasa. Mwachupa's grandson, also a guitarist, told us of how this song is known throughout Kenya—all the bands played it—but his grandfather always complained about other musicians pirating his songs. The public loved his songs and he was very popular, but unhappy because others made money off his songs and he received no return.

3. Digital Return in Malindi

The following morning we drove up the coast to Malindi[4] where our local assistant, Mwahui Mwatela, took us to descendants he managed to locate through contacts at the Mekatilili Malindi District Cultural Association. First we went to the home of Fatuma Ali M'bwana, a relative of Mwana Bibi, in 'old Malindi'. There we met family members including Mwana Bibi's granddaughter, Thuweba Bacha. Mwana Bibi sang 4 *vugo* dance songs with a group of Swahili women for Tracey on 13 October 1950. *Vugo* is a female dance performed by women at weddings and other celebratory occasions. Two cylindrical, double sided, laced hand drums and horn rattles played with sticks are played by women. On Tracey's recordings there is

4 Kahithe Kuru, traditional dance scholar serving as a consultant for the Ketebul film, accompanied us for the fieldwork. Her detailed fieldnotes were added to my research data.

also a man playing a double-reed Zumari oboe. Tracey commented on his fieldcard, "these Zumari oboes are bought from the Arab sailors who come down the coast every year in their dhows, sailing before the monsoon winds in each direction between the African east coast and the Persian Gulf" (H. Tracey fieldcard for "*Mwache Aukereze Mvumo"* [trans. "Let Him/Her Cut the Mvumo Tree with a Saw"], 13 October 1950). We played Tracey's recordings for those present and soon the granddaughter, Thuweba, got up to dance and sing along. Thuweba proceeded to play a recording of what Mwahui called "modern *vugo*" for us from her cellphone. She explained that she is the singer, she performs with a *vugo* group, and she is carrying on from her grandmother. When asked if new songs are composed, she responded that traditional songs are adapted with new lyrics; for example, the songs may be turned into campaign songs with candidates' names. Thuweba sang a *vugo* wedding song for Patrick when she was told he is getting married soon.

Next we picked up two women, Kache and Tabu Chadi, both daughters of the singer Chadi wa Boyi who sang two *gonda* dance songs with Giriyama men for Tracey on 13 October 1950. They sang along with the recordings playing from the vehicle's CD player as we drove out of Malindi to Kijiwe Tangi, a village where their brother, Mzee Kadenge Chadi wa Boyi, lives. Mzee Kadenge had invited a group of men who play drums for *gonda* to be present for our meeting, evidence that the dance is still performed in the area. Now up in his 70s, Mzee Kadenge still performs *gonda.* He clearly remembered being there when Tracey recorded his father, he remembered the equipment, the truck, the speakers, etc.; he was 8 or 10 years old at the time. He confirmed that the recordings were made at the District Commissioner's office in Malindi, located in a place called Shella. He even remembered who Tracey recorded next after his father, another singer from a nearby village named Chandaruwa Waya (this was confirmed from the track list of Malindi recordings and our fieldcard scans—he sang two *msego* mourning dance songs for Tracey that day. He immediately recognized the songs recorded of his father and mentioned he had heard them once before from an LP. He sang along and did the *gonda* dance steps and arm movements while sitting outside his house. Again, the recordings were played from Steve's laptop. The younger of the sisters was only 2 years old when her father died. She cried as she listened to the recordings and later told me how grateful she is because these recordings are the first time she has ever heard her father's voice. We continued with conversation about Hugh Tracey and his work and that day he came to Malindi and how it was that Mzee Kadenge was able to remember who performed after his father.

4. Archives, History, and Renewal

Carrying out digital return of music heritage recordings is a complicated, daunting process that is made more difficult by the high costs involved. It is hoped, however, that this account of one, all too brief and incomplete, effort that made contact with only a very small percentage of the families of musicians recorded by Hugh Tracey in Mombasa and Malindi, has demonstrated the reasons why the work is valuable and needs to be done. Far more remains to be done, but the recordings are in the hands of some descendants of the original artists and some musicians in the communities where they were created. The value for the people receiving the recordings is self-evident. I conclude with an account of a coincidental meeting while attending the 2017 annual conference of IASA in Berlin that further shows the value of making the reciprocal gesture and the importance of giving the recordings back to those they came from.

When I chanced to meet the highly respected Kiswahili poet, political activist, scholar, Abdilatif Abdalla (b.1946 in Mombasa) over dinner,[5] I asked him if he was interested in copies of Hugh Tracey's Mombasa recordings and told him about doing this Project supported by IASA, back in February 2016. He immediately remembered the Jawhara Orchestra as one of two taarab orchestras performing in Mombasa during his youth. I sent him a PDF of the metadata booklet via email and the 2 CDs of Mombasa recordings via courier when I got back to South Africa. Later I sent him Tracey's images of the Jawhara Orchestra and two portraits of an unidentified man, photographed while reading from the Koran, via e-mail. The email messages I received from Abdilatif Abdalla in response to receiving first the metadata notebook, then the recordings and finally the photographs read as follows:

> Once again, many thanks for your generosity in making these songs available to me. I very much appreciate it. When going through the Mombasa list I found the names of two people whom I knew personally. The first is Ahmad Basheikh Al-Ustadh (see CD 2, numbers 10 and 11). This was my great uncle. He is the one who brought me up since I was three years old till when he died in 1962 after collapsing in Sauti ya Mvita studios while recording his poems. He had a weekly programme there. He is also the one who introduced me to Kiswahili poetry …
>
> Unfortunately, all his recordings could not be found when the radio station closed after Kenya gained its Independence. So these two recordings herein are a treasure to me.
>
> The second is Sheikh Mbaruku (see CD 1, numbers 19 and 20). He was a close friend of my great uncle. Sometimes, when he came to visit us at home in Mombasa, he used to come with his musical instrument (oud) and the two would sing together. What a pleasure it was!! Sheikh Mbaruku was blind in both eyes. This great uncle of mine used to be a singer as well in his young days. (22 October 2017)

After receiving the photographs of Jawhara orchestra:

> I am also thankful for the photos. I told you that one of our relatives, Nassoro wa Chaka, was a singer in Jawhara Orchestra. He is the one on the left of the photo, with his right hand in the pocket. Amazing!

5 While imprisoned in Kenya (1969-72) for sedition for publishing *Kenya Twendapi*, (tr. Kenya where are we going?), a pamphlet in support of the Kenyan People's Union and critical of Jomo Kenyatta's post-independence regime, Abdalla wrote his famous collection of poems *Sauti ya Dhiki* while in solitary confinement. It was published upon his release in 1972 and ironically awarded the Jomo Kenyatta Prize for Literature that same year. He has lived in exile since 1972 in Tanzania, Britain and Germany. Much additional information about Abdilatif Abdalla's work, such as articles, interview transcriptions and youtube videos, is available via the Internet. He was in Berlin to assist my colleague and friend also attending the IASA conference, Professor Kelly Askew, with translations of Kiswahili poetry for her forthcoming book.

> If I am not mistaken, the one near the microphone is called Hussein. I have forgotten his surname. If he is the one, then he is still alive and living in Mombasa. I will ask my elder brothers and other people to help us identify the rest. This is history!

Then, in response to viewing the 2 portraits of the muezzin who Tracey recorded after I sent them as email attachments with a message saying, "Do you know this person? The photos aren't identified." Abdilatif Abdalla responded, "I just can't believe this, Diane!!! This is the great uncle of mine, Al-Ustadh Ahmad Basheikh. I hug you so tightly!! Thank you so very much!" (27 October 2017).

Clearly this gesture of reciprocity to Abdilatif Abdalla has not only touched him deeply, it has brought additional information, including the possibility of locating a musician still alive who performed for Hugh Tracey in 1952. In Kenya in August 2014, three men well up in their 80s were located who were recorded by Tracey in 1950. They were all amazed at the reciprocal gesture and thrilled to receive the recordings. Two of them have since passed on. It can only be hoped that Hussein is located still alive in Mombasa so the gesture can be made yet again—as an ethical act that, despite all the difficulties involved, is an offer of reciprocity that needs to be integrated into 21st century archival practice.

INNOVATION AND HUMAN FAILURE IN SMALL-SCALE AUDIOVISUAL ARCHIVES – WHAT DO WE NEED TO LEARN FROM EACH OTHER?

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1. Introduction

Based on several previous studies presented at IASA annual conferences (2001, 2005, 2009, 2013, 2014, 2015, 2017) this paper intends to summarize long-term outcomes with a focus on the innovation needed in the digital era and the possible human failure in small-scale archives such as those the authors work with in Asia. In this paper, all authors[2] follow their specific question with the purpose of contributing to an analytic view on how technology collides with or creates a sense of community. Our emphasis is on sharing positive experiences and encouraging others by honestly discussing possible failures due to various conditions. Embedding these possible failures into a wider context is part of a mutual learning process.

At the same time, each author will address a different clientele of stakeholders such as educational institutions, governmental decision makers, academia, occasional users, and the audiovisual archivists themselves.

Figure 1. Map of small-scale archives in Asia mentioned in this paper. 1 = ARCPA (Audiovisual Research Collection for the Performing Arts at Putra University, Malaysia), 2 = ATML (Archives for Traditional Music in Laos at the National Library in Vientiane, Laos), 3 = Archive of University of the Visual and Performing Arts, Colombo, Sri Lanka, 4 = ASCOM (Audiovisual Archive of the Shanghai Conservatory of Music).

1 Ahmad Faudzi Musib, Putra University, Malaysia (UPM), Faculty of Human Ecology, Music Department; Thongbang Homsombat, National Library of Laos, Archives of Traditional Music in Laos; Chinthaka Prageeth Meddegoda, University of the Visual and Performing Arts, Colombo; Gisa Jähnichen & Xiao Mei, Shanghai Conservatory of Music. The panel on which this paper is based was organized by Gisa Jähnichen, gisajaehnichen@web.de.

2 The authors know each other and have networked through the activities of the panel organizer in all these institutions over the last two decades.

2. Ahmad Faudzi Musib: 'WE KNOW WHAT WE CANNOT DO'

As the Head of the UPM Music Department, where the Audiovisual Research Collection for the Performing Arts (ARCPA) was established, I have to report that many prospective advantages of an archive cannot be used as financial support, there is a dependency on short term projects, and staff education in archival matters is limited. Nevertheless, there are specific academic and educational activities in which I could apply advanced technology that are very useful and inspiring to others. In this paper, I will share some examples of these.

The purpose of ARCPA, as stated in its code of ethics, is to collect, to authorize, to manage, and to provide access to collective and individual cultural expressions captured as audiovisual materials (Seeger & Chaudhuri, 2004). The current social environment does not permit using the archive in the way we want. Therefore, those actively involved in the archival work have to convince their academic and non-academic colleagues that the collection of audiovisual materials and their use as academic sources is nothing new in history. In the age of the internet and digital mobility, historical and contemporary audiovisual materials stored physically on diverse carriers in the archive are of increasing importance as art, entertainment, and information. In some cases the use of sound and visual data for the transmission of knowledge has a greater value and impact than any other printed documents (Harrison 1997: 182).

Working on the awareness of an archive's meaning is one important way in educating the society in general and the involved academics in particular. An often-underestimated need is to instruct academic colleagues how to use the archive without being worried about losing the content or being plagiarized (Jähnichen, 2015). One useful explanation could be that any non-digitally available book provides much more chances of being plagiarized compared to those books which are digitally accessible. Books that are not available through means other than physical access are more often a source for plagiarists because established similarity checks provided by digital software cannot detect them. With this issue in mind, we encourage the practice of citing audiovisual materials and we demonstrate how audiovisual documents that were collected through recordings can be shared and re-used. In our database, they come with proof of authorship and other important metadata that can be traced publicly thus providing security against plagiarism or illegal 'borrowings', both of which can be detected through simple search software. Nurturing such a way of thinking in potential depositors through an increased awareness of using the archive is one of the main tasks that cannot be done easily in an unprepared academic environment. The process of guiding researchers to use the archive as a place to deposit materials as well as using already stored audiovisual materials for references or as teaching tools invites many obstacles such as the previously-mentioned trust issue which is obvious through questions such as, "What if someone copies me or uploads it on YouTube?"

In the past, all students' research papers (Figure 2) were stored as printed documents and could not be accessed or cited. They were only used to be mentioned in CVs. Students did not see a need in writing carefully or doing serious research as their outcomes were not re-used or referred to. Now, some qualification papers are digitized step-by-step, and, yet, they are only partly well documented, especially the accompanying music and video examples, which are considered useless attachments by some university administration staff. Without proper documentation or metadata to document the audiovisual sources, these research papers will be meaningless in future digital information flows. Some necessary steps are currently being undertaken in order to preserve these documentations on a qualitatively acceptable level. However, we are still far away from being effective.

Figure 2. Past research project papers in printed form, mostly unavailable for reference unless the supervisors are familiar with the topics.

Currently, (Figure 3) students are required to submit a copy of the hard bound research project as well as a soft copy in PDF format as final submission to the main library without audiovisual files. However, ARCPA is managing the depository of audiovisual materials both as documentation and audiovisual files that are mainly deposited by UPM music students.

Figure 3. Research project papers as printed documentation at the Faculty of Human Ecology in Putra University, Malaysia (UPM). The demanded unicolor binding makes it even more complicated to find necessary references.

Another argument is that with a small-scale archive such as ARCPA, a researcher is able to interact with and share parallel cases through using the archive contents as primary or comparative research material. In this case, a researcher is able to view what other scholars are doing, how they did it, why they did it, and—as long as proper citation is delivered—to quote from their supplements. Primary access might be given by displaying a limited number of pages or abstracts and short sound or video clips in low resolution. One example that promotes this type of archive access and use is a study on sound profiling, such as the usage of audio files in sound banks collected from different positions at a definite location. Having the archive's possibilities in mind, I did research on contextual sound preservation of two local string instruments. By making use of these sound banks, sound archives enable users to be in an acoustic space through listening without being physically present in that very space. Further, recordings in sound archives enable one to hear sound in a space with its multi-layered dimensions. Research in contextual sound is about opportunities made available to the user to access sounds beyond the capability of one's existence in an acoustic space, for example of a selected local string instrument (Musib 2015:6). An excerpt (Figures 4a, 4b, 4c) taken from the thesis is an example that illustrates where the small-scale archive immediately enables a researcher to be cited by and to cite another scholar not only in a respectful way but also in a valid way regarding citation rules for qualification papers.

trusted sources of traditional knowledge to him. Abas taught Arthur Borman to play *pratuokng*[14] (Borman, ARCPA 2617, 2012: 00:01:18 – 00:02:35) Also, Abas told Borman of how the *pratuokng* came into being. According to Borman, based on what Abas had told him, in the past, the male were the one who went to the forest to collect palm fruits called nyiur[15] to make tuak[16] (Borman, ARCPA 2618, 2013: 00:01:39 – 00:06:00), a local drink that was produced by fermenting nyiur juice. During collecting nyiur, these groups of men were also cutting and collecting bamboo to renew their tanju or drying yard of the longhouse. The surrounding hills and forests of Annah Rais are rich in natural resources particularly in different types of bamboo. The selected bamboo was brought out from the nearby forest of Annah

Figure 4a. Thesis excerpt with in-text citations.

Transcription 3

Interviewee:	Arthur Borman
Date:	2013
Place:	Annah Rais, Padawan Sarawak
Archive Number:	ARCPA 02618
Start / End Time:	00:01:39 – 00:06:00

Audience : Any particular occasion that this instrument is played?

Borman : Normally the creation of this instrument in actual fact, I would say is just by coincidence. Because the version of the story differ from one person to another, but I prefer to listen to my teacher, because he knows a lot. He makes it, he plays it, teaches it so we prefer to listen to him. So, based on his story it was said that in the old days, there will normally a group of man, in a group of 4, 5, or 6 of them, normally they will go to the jungle, to search for a kind of fruit, palm fruit to make wine. So normally if they go there, they can just go to the jungle and collect the fruit and bring it back. But the usual thing is, when they are back at the village, they will never really process the

Figure 4b. Transcriptions at the appendix.

Bock, Carl (1881). *The Head-hunters of Borneo: a Narrative of Travel up the Mahakkam and down the Barito; also Journeyings in Sumatra*. London: Sampson Low, Marston, Searle and Rivington.

Borman, Arthur (2011). Personal communication in Annah Rais, Sarawak, Malaysia. 14 June.

Borman, Arthur (2013). Personal communication in Annah Rais, Sarawak, Malaysia and via e-mail. 5 July–30 September.

Figure 4c. As appearing in the references.

All information can be updated at any time in ARCPA as well as through a supervision unit called Putra Science Park of UPM. This university unit stores all depositors' files in a digital duplication, hence creates a continuously updated database for another scholar to refer to.

Though all these benefits are obvious and convincing, it is still difficult to explain to staff members and administration how important the support of these academic sources and community resources is.

A final challenge for using audiovisual materials from the archive, has to do with staff performance reviews. All staff must fulfill their Key Performance Indicators (KPI). KPI monitoring is done through reports made by the staff member, which are then endorsed by the head of the department, followed by the deputy deans committee that is appointed by the university at the faculty level. All of these administrators are not familiar with audiovisual documents and archiving methods. Complications arise when staff members do not report their involvement in international conferences, publications, filing of intellectual properties or copyright, or reporting any other achievement hence pulling down the percentage of the KPI targeted by the faculty as well as the University as a whole.

The entire university demonstrates its achievements through the reporting of KPI made by each staff member of a department, the faculty, and the university as a whole. The current achievements of UPM can be seen as reported by the New Straits Times, 25 July 2017, that the status of Universiti Putra Malaysia in the QS World University Rankings 2016/2017, has climbed up 61 places to the 270th position, from the 331st placing last year among the world's top universities. Universiti Putra Malaysia is now the second-best university in Malaysia (Sani Rozana 2017). This is partly due to the contribution to patent products, copyrights, publications, and professional services. Yet, we know that there are still many problems to be solved and the entire evaluation process itself is continuously under critique as the ranking is an average and does not show the true value of each contributor (Hariaty, Lim & Loh 2010). An effective use of audiovisual archives should be introduced as a further quality of any university.

In closing, I ask how we can optimize a long-term implementation of soft skills among staff and students that ensure an effective use of audiovisual documents in the same way as written documents and how does this connect to the wider social development in academic institutions? Do we need other types of measurements for evaluation? What do we have to be prepared for in the future?

From my viewpoint, obstacles can be seen when an inconsistency occurs as certain parts of the world move faster and faster towards high-tech solutions where archives such as our small-scale archive are common place, and the other parts of the world that are not in the same notion. This fact adds to the already mentioned issue that to a large part of the academics in the university, audiovisual archives are still viewed as exposing findings which will in turn be copied by others. Putting archives up means to some of them a "human failure" (Jähnichen 2015, 2017). These academics are still uncertain about the competencies and the importance of the archives as being an investment into knowledge resources. Although ARCPA is not meant to self-sustain financially, this small-scale archive should be the platform that enables scholars to improve their knowledge and their experiences in the department, reaching out to other faculties, students, researchers, and academics. And that is what we cannot do yet.

3. Thongbang Homsombat: WE KNOW WHAT WE NEED

At the ATML at the National Library in Vientiane, over a period of 18 years, we experienced many twisted and difficult changes in archival procedures, one of which was moving to a new building that was constructed based on plans made in the 1990s. Our first small topical audiovisual archive in Laos impacted several local activities that I will focus on in some examples with a specific emphasis on our co-operation with prospective governmental and international stakeholders.

One of the difficulties was to switch from early digital and analogue to only digital recording and preservation techniques without compromising quality. This is especially difficult if the equipment-based support shifts to requests for digital hardware and mainly good software with service and training opportunities. We have always depended on researchers and external organizations that cross our institution and leave their progressive traces such as new hardware, some funding for training, or some personal monitoring of procedures. Our recent possibilities are limited to audio transfers as video digitization is still not effective or conducted in low quality.

Luckily, we always had support from IASA and SEAPAAVA members, two organizations that took care in a selfless and detailed way helping with difficult conditions of maintenance and acquisition. Nevertheless, we had to resist many administrative habits such as staff rotation within the National Library's different departments, or reconstruction work on site that required specific safety measures.

Therefore, for us, the quality is not only seen through the final file integrity but through the entire file environment and the social components given. A big part of our work is to convince various groups of administrators and finally the people concerned with traditional and contemporary music, dance, and performing arts of the necessity to physically create a storage and access facility (our archive) in which continuity is central so that the archive lasts longer than the employment period of trained staff members.

In 1999, we started like this:

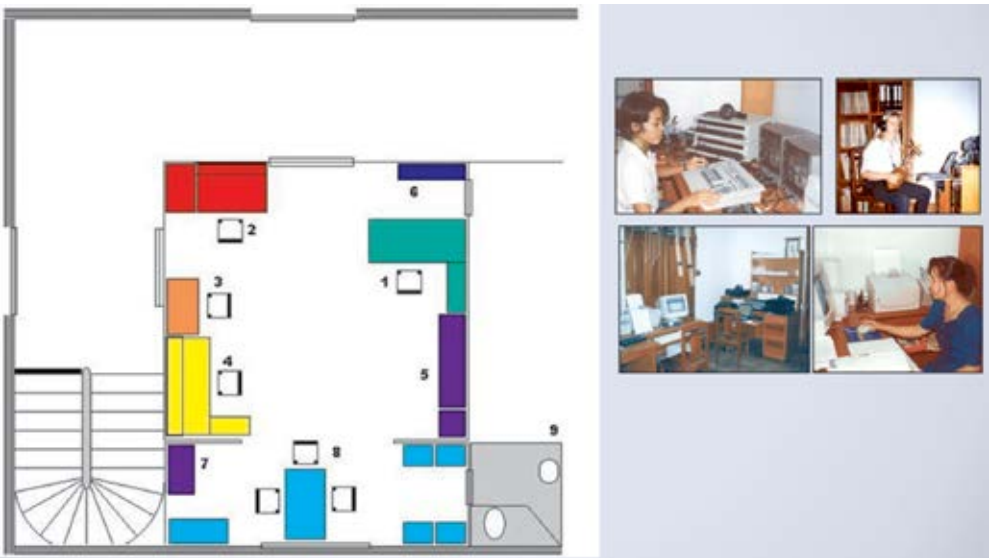

Figure 5. Draft of the archive in the old building, Nam Phou, Vientiane. This building was an old French house previously used as a prison. The one and a half rooms we had served as storage, data entry room, meeting room, access room, and sometimes as a recording room. The equipment dates back to a complicated transfer of hardware according to a model recommended by staff of the Berlin Phonogram Archive in Germany.

Our first lessons in data transfer started with instructions like this:

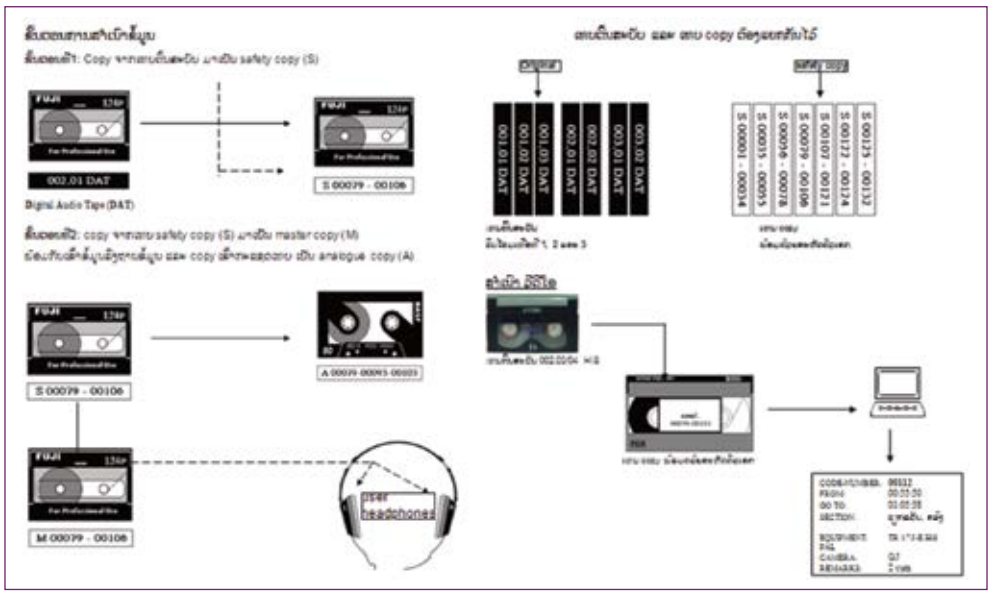

Figure 6. Detailed and illustrated instructions of how to proceed with various tape recordings and how to technically document them from a teaching sheet developed in November 1999.

Now we have to adapt to a new building, new technology, and to a new way of administration expressed also in a new joint archival platform, mainly a modified OPAC (Online Public Access Catalog) system. Though we know that this platform will one day change into another platform which can network better, faster, and in a more democratic way, we have to go through this process of learning from "issues."

Fieldwork, preservation, maintenance, and providing access are a continuously changing process for us. We also provide classes on using audiovisual content. This is necessary because modern media devices are demanding in making effective use of easily accessible low quality audio and visuals. We also do not ignore popular music creations of the youngest talents. Our archive is the place where such local home productions are collected as they will vanish in a very short time through high market pressure from abroad though they represent a specific part of the local history of performing arts.

In the newly built archive, where we have enough space but people hardly find us because it is far outside from the city center, we have to cope with long distances between storage, replay equipment, and the physical library. We had to fight to keep the storage in a safe area of the new building, not in the highest or lowest floor, which seemed to be a problem of comfort for other departments. We also attended a number of seminars on new technologies and disaster management before moving into the new building. However, the most important things are not just of a technical nature.

My questions for the future are:

1. How can we convince our main stakeholders, such as the public users, to support archival work and in which form?
2. How should we argue in an effective way with administrators and officers in ministries in order to be better supported in the long term?
3. Which future platforms are most suitable for such a small yet nationally important archive?

We are searching for answers not only among archivists. We also need social scientists and policy makers to get on our side. Therefore, we have no reason to rest on top of our achievements.

4. Chinthaka Meddegoda:[3] WE KNOW WHY IT DOES NOT WORK

Educated as an audiovisual archivist at UPM and now being thrown into a large University of the Visual and Performing Arts (UVPA) in Colombo, I want to give some examples for obstacles in promoting audiovisual archiving from the viewpoint of actual users. Drawing parallels to other developmental issues, I want to focus on human failures in dealing with fast technology turnovers and societal needs reflected in this field of work.

As I have undergone my PhD studies at Putra University in Malaysia, and have worked as an archivist in a small archive set up at the same university, I am quite informed about the importance of preserving sound and audiovisual material. I was guided by Professor Gisa Jähnichen about archiving and research. My dear colleague, Ahmad Faudzi Musib, is one of the researchers regarding sound preservation who also taught me important technical matters of archiving.
Here, I need to discuss what the situation in Sri Lanka requires and what the leading archives undertake to run their preservation, maintenance, and accessibility efforts. It is mainly about what are their priorities. Among the official archives in Sri Lanka, the following are referred to in this contribution:

- Department of National Archives of Sri Lanka.
- Sound Archive, Sri Lanka Broadcasting Corporation.
- Research Unit, Faculty of Music, University of Visual and Performing Arts.

Other institutions that host large archives are the Cultural Department, Sri Lanka; the National Television Corporation, Sri Lanka; the ITN, Sri Lanka; and the Archives of University of Colombo, University of Sri Jayawardhanapura. They were only mentioned in various interviews but not investigated regarding their audiovisual collections.

Among the universities that deal with sound and audiovisual material, my employer, the University of Visual and Performing Arts, holds the most important place in this regard in Sri Lanka. The archive of UVPA consists of sound and audiovisual recordings which are loaned out to students and lecturers on request. The collection consists of videos of Sri Lankan folk theatre; Indian music performances of various artists; Sri Lankan, Hollywood, and Bollywood films from different periods and a lot of other items. To gather data, I met with the archivist in the unit, Mahinda Senevirathne, a violinist of Hindustani classical music who has taken care of the archive since the year 2000.

3 chinthakameddegoda@yahoo.co.in, UVPA, 21 Albert Crescent, Colombo 7, SRI LANKA

CPM: What kind of audiovisual material do you archive?

M.S: We have films, film history, Sri Lankan folk music, Hindustani folk music, various documentaries. We have everything for example how Kalyanji and Anandji do compose and so on. But no one uses it.

CPM: Do students use them?

M.S: I think it is not a mistake of students. The lecturers are those who are not aware of this. …I have informed the staff during many formal academic meetings. I am just protecting the recordings.

CPM: Do the lecturers store their recordings here?

M.S: Actually it should be like that. They never store anything here. Are you doing this interview for a research? Please present your paper also to the people here so that they at least understand you.

CPM: Do outsiders come here and use the recordings?

M.S: Yes, they do. I maintain a book here reporting who came and what they were asking for. Even some foreigners have come here. They just look at what we have and then they go.

CPM: Do you consider copyright issues and other matters of recordings?

M.S: Sometimes, yes. The access to the dance videos of Master Chitrasena is limited, because he does not want others seeing his traditional dance techniques…

CPM: I think you have arranged recordings in an order?

M.S: Of course, but these days, it is a bit messy since Fatima is not working here anymore.

CPM: Why does Master Chitrasena not want to let others use his recordings?

M.S: Such people do not want to share their knowledge about the subject with others.

CPM: What do you think? How we can improve archives in Sri Lanka?

M.S: There must be a person who values the history. At the moment people think history means archaeological stuff. I don't know why they don't think these recordings are also valuable history. Of course, there is preservation to some extent, but not in large scale.

CPM: Where else do you know there is an archive in Sri Lanka?

M.S: I think only the National Archive. Here in Sri Lanka, people are reluctant to share their collected data. Even some teachers of Hindustani music do not want to share the knowledge easily with the students. They think students have to work hard as we did, and therefore they hide many things. One of my teachers used to say, you know we did a lot of research to find things through hard work for many years, and then students come and take this information in 10 minutes.

The broadcasting cooperation of Sri Lanka was initiated in 1948 and has provided their service to India since some areas of India such as Kolkata, Bihar, Orissa did not have a radio cooperation in that early time. I met with one staff member, Mr. Alupatha Mudiyanselage Chandradasa4, a passionate archivist who keeps the recordings in the library and is, at the moment, conducting the digitization process of old recordings. I asked him:

CPM: Do outsiders have access to the recordings when they want to know something?

Chandradasa: No, only the staff has access, which means me. But if someone wants to get access, then he has to write a letter mentioning what he wants and then they may get permission from the director. I am here guiding them through their requests. But we do not allow copying anything, only listening is permitted. Because, then anyone can steal our songs and then make a new track for the same melody, and then publish it …As a national radio, we cannot allow that. We always broadcast original songs.

The National Archive of Sri Lanka situated in Colombo just a half-kilometer distance to my employer provides useful access for undergraduate students of my university who have to write a thesis on music related topics. I met the director general of the archive and her staff who helped me to know more about their undertakings and future plans. Here, the training plans are very important as a lack of manpower is seen as the main obstacle. One interesting point was the fact that there exist a large amount of sound recordings made on film tapes as this was the only available recording device in earlier times. There are no pictures on these reels, only the sound tracks. The tapes are already in very bad condition. Dilini Linayage reported about one staff member, Mr. Palitha, who invented a digitizing machine for old films. He digitized some of the oldest films in Sinhala that are still available. But the process is slow and the single machine cannot be sufficient for the sheer amount of material. The new buildings of the archive are well equipped with facilities and replay units. But only two permanent staff members are working with audiovisual material.

The main problem, as far as I can see, is the social understanding of audiovisual archiving. Different from the other cases, the gap between technical creativity and social understanding is very big. Sri Lanka is a place to which digitizing projects are outsourced from large companies around the world as Sri Lanka has well trained IT staff. The public sector or small-scale university archives do not profit from these skills, partly also, because administrative units of educational institutions do not feel the urgency and the immediate need as many teaching patterns are still isolated from global necessities.

4 The Interview is available upon request to the author.

5. Xiao Mei & Gisa Jähnichen: WE KNOW HOW IT SHOULD WORK

We both work at the Shanghai Conservatory of Music, which is well equipped with technology, space, and manpower. In this section, we want to draw attention to the urgency of promoting audiovisual resources in multiple ways. The main promotion should come from the communities and the most progressive parts of society, such as artists, researchers, and educators. We have a clear idea of how we want things to be organized and used. We also know and are not always satisfied with how it is done in daily practice. Our scope, therefore, is a critical focus on evolving the perspectives and efforts of future archivists.

The audiovisual archives of the Shanghai Conservatory of Music are in a complicated situation. Actually, nobody is fully responsible for the maintenance and the development as the main stock of the equipment and the holdings belong to different departments. Their storage conditions are well meant but have not been updated or continuously managed as there is no paid staff working after an initial project completed that provided the archive with several necessary pieces of equipment for replay and digitization.

An achievement of the research section in which the Research Institute of Ritual Music—an externally supported governmental unit—is integrated, was to establish a database. This database is a handmade product serving the display of holdings in three categories: musical instruments in China, vocal techniques of mainly minority voices in China, and rituals in China. For each category, a distinctly designed catalogue of detailed parameters can be filled in by the archivists. The three sections were created according to running research projects. Photos and video snippets are accessible on the screen of only one, rather aged, computer. Other computers are available to produce video documents out of newly collected material, which is not always stored in a professional way. Also, almost all new and guest lectures are videotaped and stored. The archive is, therefore, a production place that is temporarily used when events or visitations have to be accommodated. Unfortunately, the necessity to manage an audiovisual archive coincides with the rapid spread of online platforms and storage or file management applications that are often viewed as ultimate solutions. The screen with the database is, for example, presented as 'the' archive.

Initially it was imagined that students and staff doing fieldwork would deposit their outcomes in the archive and provide access for re-use. The archivist would receive the material first, along with the descriptive information, and ensure its safety as well as a proper storage environment. The material varies in quality. Though students and staff are well trained in orally conducted field work, interview techniques, and management, they are not trained in field work recordings and the required preparation and ongoing documentation needed after the recordings have been made. The equipment used varies in quality, ranging from smartphone mono recordings to professional HD video recordings. The entire archive room looks shallowly cleaned up, but single storage sections are also carelessly used for private issues as staff and students are not willing to grant the archives priority in their own workflow and professional research because there are misconceptions about archiving in general and responsibilities towards archives in detail.

For example, the question of copyright: China as a State historically did collect many songs, manuscripts, and other specific information without considering attributing these items to those people from where they came. The deep belief that collecting, archiving, and storing information of any art form is State business leads to a strange willingness to let it happen all the time without questioning rights. Anything labeled as being Chinese carries a double meaning: being collected on the territory of China and being not owned by any individual Chinese person. It is hard to compare this type of national interest with other countries in

the region. However, in recent times, people learned to consider profit, most recently with the introduction of the UNESCO intangible heritage program (Cunningham & Cunningham 2004). So, the questions of payment are not connected to rights but to individual economy, replacing the ethical background of cultural belongings. Rights seem to not even be an aspect of justification for monetary concerns. Nevertheless, a properly running audiovisual archive has to observe internationally established rights and respect them, whether it is economically relevant or not (Gagliardi, Prandoni & Boi 2004).

Something similar happens also in the context of archive maintenance. As the collected items are not really "individually" owned, nobody is really "responsible." The collective responsibility of the affiliated institutions and the educational goal are somewhat secondary in the way students and academics think about archiving. So, the soft skills needed in maintaining a well-equipped archive include, to a great degree, the transmission of experience and knowledge related to all aspects of archiving, starting with cleanliness, order, working schedules, but mainly with a change in workflows and training of students and staff.

One extremely important fact is that the training must include the wider context of global necessities, the further existence of human failures and their practical benefits in the advent of an increasing amount of information based on artificial intelligence and knowledge management. Without conveying this whole picture, any archival training will stay temporary, event based, and unsatisfying in the long term. Archives are, finally, places, where specific resources that include failures and culturally patterned, seemingly illogical, items are collected as well.

Beginning this semester, the entire workflow for field work items and their descriptive and technical protection will be changed. Those who collected audiovisual material will be made responsible for the database entries, their access tools, and their re-use in reports or other publications. Students who do not provide access through a proper archival process are not allowed to submit their theses. Staff will have to do the same if they want their publications to be considered valid.

Again, a specific social pattern of campaigning plays an important role. People are used to being subject to enforced rules even though they may not agree with them. Because other less personally invasive solutions did not show success, this is the 'Chinese' way of putting things on the right track. However, we hope that the understanding of the matter will lead to rational decisions and deeper insight, and that these will guide the students' attitude.

We think that the challenge of audiovisual archives in any educational context, is to develop social intelligence among its stakeholders. Because digitally born items are becoming the norm, "audiovisuality" is no longer an attribute applied to some specific collections. In the future, possibly everything might be visible, readable, audible, and increasingly intangible. Audiovisual archivists are challenged not only in their small-scale environment but in their pioneering role regarding knowledge management and resource building.

6. Joint Final Discussion

Elaborating on which problems are the most difficult to solve, the authors of this paper propose that many of them can be solved through better communication among the various small-scale and leading institutions in each country. This communication is not just a way to sort out technical issues but to develop a joint approach to a trustworthy policy within their archival cultures. At the 2017 IASA conference in Berlin, Nadja Walaszkovits, in response to our presentation on this topic, noted specifically a training workshop initiated by the

Deutsche Welle in the National Broadcasting Archive of Sri Lanka, where she personally trained archivists who are now capable of tackling difficult technical matters. Walaszkovits suggested not reinventing the wheel, but instead to collaborate among institutions and to find a way to include all groups of staff involved. The following scheme shows one approach applied while researching on the current situation in Sri Lanka, just to offer one example out of the four countries represented in this paper.

Figure 7. Scheme of Questions in a fieldwork flow on sound and audiovisual archive purposes (Scheme by Gisa Jähnichen, research conducted by Chinthaka Prageeth Meddegoda).

To get some precise answers, colleagues of different universities were asked some personal questions:

	Do you take video or audio recordings for your research, teaching, or working practice?	Do you really use these recordings later?	Where do you store these recordings?	Do you like to share your recordings with others or are you afraid of losing your data by sharing?	Do you know an archive where you can deposit your recordings and where they are accessible to others?
Lecturer, PhD, male, (40), UVPA	Yes	Yes	In the personal computer, pen drives, google drive	I normally don't share my data. However if the data is requested by someone, I consider their request and objectives of using the information	No
Lecturer, PhD, male, University of Colombo	Yes, but not my own. I take them from internet.	Yes	In my laptop	Like to share	No
Lecturer, PhD, male, (50), UVPA	Yes	Definitely	CD/DVD, at the same time put in google drive	Yes	Yes
Lecturer, PhD, male, (39), UVPA	Yes	Maybe yes, maybe no	In UPM ARCPA, nowadays no place to store such recordings in Sri Lanka	Yes	My supervisor knows
Lecturer, PhD, female, (38), UVPA	Yes	Yes	Sharing to others in mail	No	Not specific place known

Figure 8. De-institutionalized personal questions about archiving matters and practical habits (conducted by Chinthaka Prageeth Meddegoda). Excerpt (August, 2017).

In short, and most of this also applies to other small-scale archives mentioned, the following discrepancies between the general complaints of the archivists and the reality of insufficient conditions can be summarized in this way.

Problems articulated by archivists:

1. Not enough facilities (replay machines, interfaces, and other equipment).
2. Limited funds.
3. Not enough trained archivists.
4. Workload is too big.

Actual problems we observed:

5. There are no trained staff members who understand the importance of immediate preserving or the sensitivity of the material.
6. Existing staff members need guidance and a plan for the workload.
7. Lacking networking regarding the subject.
8. Overestimated and underestimated issues in understanding what they have and what they do not have.

These discrepancies are one point in the primary evaluation of the audiovisual archival situation in small-scale archives situated in Asia. In the future, there will need to be a stronger network of archivists and peoplein charge of knowledge management in order to keep these archives running. Also, the connection to professionals through organisations in the region and internationally, such as IASA or SEAPAAVA, is very important in order for the archives, the archivists, and the profession to be accepted in the social and political environment of each country.

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BROADCASTER'S DILEMMA WITH ARCHIVE ASSET MANAGEMENT: TORN BETWEEN LONG TERM AND PRODUCTION REQUIREMENTS

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1. Broadcaster's Dilemma

The media industry was shaped by fundamental changes in the last decades. Contemporary capturing, editing, and production, as well as distribution, have become digital and file based. In contrast to this reality, institutions such as broadcasters, distributors, or cultural heritage organizations have accumulated hundreds of thousands of hours of content bound to physical carriers, both analogue and digital. Those tapes, records, films, cassettes, disks, or drives are sitting in the archives and can be of great value. However, due to obsolescence of players and physical deterioration of the legacy media, recordings may become unplayable and the content they were meant to preserve can be lost.

As a consequence, broadcasters often find themselves faced with a dilemma as they strive to manage their current production and distribution on one hand and preserve their legacy and contemporary productions on the other. Within this, the setup of file-based repositories is an essential strategy, because obviously content can be made both easily accessible and readily available for use in production and distribution.

The setup of a digital archive poses new challenges, especially for the conservation of investments. Whereas millions might have been spent to create an hour of content, the many thousands of hours lodged in an archive are often considered to be a 'free of charge' asset which requires no further expenditure.

The broadcaster's requirements can be summarised as:

- **Hundreds of thousands of hours of archive content:** The broadcaster is interested in not losing valuable archive content, but the sheer size of the job poses fundamental difficulties in preservation.
- **Long term preservation of archive content:** Archive content needs to be there for generations to come, as historical artefacts are a proof of history and possibly also monetisable resources.
- **Obsolescence of players / Deterioration of carriers:** The progress of technology and the nature of physical carriers (aka as "degralescence[1]") make continued preservation on the original media unviable.
- **Migration of content bound from physical carriers to the digital domain:** Migration to the digital file based domain will be the only option, but various issues related to physical carrier and digital file formats have to be overcome during migration.
- **Choice of archive format:** What file formats fulfill all archival requirements? Will I prefer a multi-format archive or a normalised archive format? Will I select a dedicated archival format which is possibly lossless and not lossy as usually in production?
- **Feed archive content to production system:** Archive content is valuable if it can be reused in production.

1 Mike Casey, "Degralescence: the combination of obsolence of replayers with degradation of carriers," IASA journal, no.44, (January 2015): 17.

- **File based production:** All production workflows are now file based, from recording to distribution.
- **Periodically changing production formats and environments**: Production file formats as well as production systems change with the market introduction of new standards and technology.
- **Distribution of content to various platforms:** In the 21st century a broadcaster needs to play out content to more than one distribution channel. The traditional TV and radio channels have to compete increasingly with various Internet distribution platforms, including in-house and external on-demand services.
- **Dissemination platforms change rapidly:** As the media market grows more competitive, a broadcaster will have to become more flexible and adapt to new forms of distribution. Production, Archive and Distribution should therefore be streamlined while staying compatible.

The requirements above point to the growing importance of a **repository** which specifically takes care of archival data and which could be described as:

- Stores less frequently used content (think about production footage from the 1960s)
- Stores legacy content from the historic beginning of a TV station until the file based era
- Requires the ability to maintain interfaces to many different kinds of production systems
- Enables a broadcaster to quickly overcome its degralescence problem of carrier based audio and video archives in an easy to manage new home with enhanced descriptive metadata
- Tracks the description of and the link to the legacy physical formats – specifically in transition phases (co-usage of physical material and digitised material is important, e.g., in film collections)

For this paper, let´s call this new repository, **Archive Asset Management (AAM)**.

Such a repository only becomes a secure and independent archive if the architecture obeys OAIS[2] principles of archive functions and contains rich description and metadata. Archive assets (media essence, and metadata with descriptive rights) need to be taken care of with a special ethical framework that may be different from the norms of production environments, while ensuring full performance in daily business.

2. Archive Asset Management (AAM)

2.1 Archive assets

2.1.1. Essence

All archive essence can be digital data nowadays and any content on physical carriers will very likely need to be migrated to the digital domain in order to be disseminated. A digital archive offers many possibilities, but to preserve all investments, good care must be taken in the design of the system. If essence is to remain in good condition, a thorough Archive Asset Management (AAM) is necessary. An AAM may take care of media management and integrity, enables extensive metadata annotation, executes all transactions within the archive, and serves as a bridge to attached production systems.

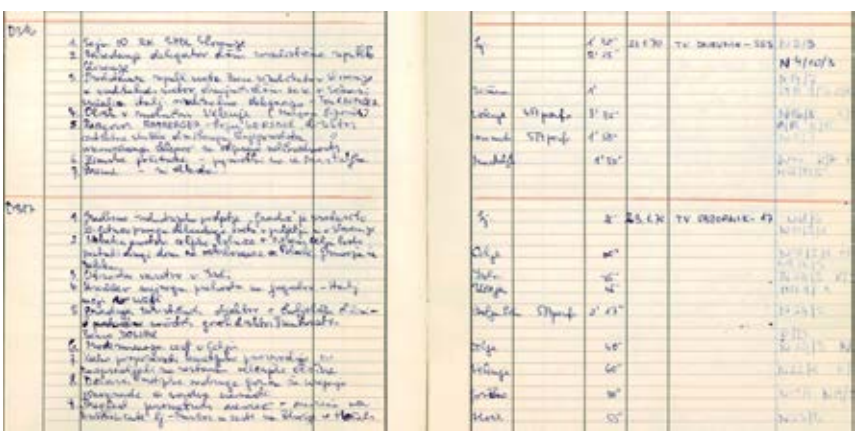
2 "ISO 14721:2012," Standards catalogue, International Organization for Standardization, accessed September 29, 2017, https://www.iso.org/standard/57284.html.

2.1.2. Metadata (and rights, and essence) = asset

Archive Assets are not just essence files, they get their value from descriptive metadata. Metadata is the key to unlock and access content inside an archive. However, a production system may not allow extensive enrichment of content with descriptive metadata. Only basic information useful for production is intellectually created in production environments, besides in some cases automatic technical metadata (subtitling, or technical information such as geotags or EXIF data). Although this may be sufficient for production workflows, to search the archive for unique archive footage or rare material, technical metadata and basic descriptive comments, especially in the context of legacy carrier-born data, do require further annotation with structured and customizable descriptive metadata. Only if media gets enriched with descriptive annotation, files will become content that is searchable and useable. A management system that does not allow complex annotation of content cannot be considered a practical archive, but rather a large and very expensive black box. Even if cloud based tagging tools help enrich content, a basic description of, for example, a Georgian field recording or Slovenian metadata from a broadcaster need the intellectual resources of an archivist to make it clear, especially for legacy content, what the recording contains.

Example: Metadata Card Georgian Broadcaster – handwritten (Georgian font)	Example: UAE – National Broadcaster (handwritten Arabic language)
	

Example: Metadata Card Slovenian National Broadcaster (handwritten Slovenian language)



It turned out that some unsuccessful projects were reported[3] where outsourcing of metadata annotation to an external service provider caused more problems than gain, requiring additional remediation after the fact. This gets more obvious when looking at the source of metadata above which is far from being easily digitally processable.

2.2 Archive migration

Traditionally archives are the heart of institutions. Over time, essence has been recorded on physical carriers, collected in the archive, and kept safe there to survive the course of time. While broadcasters focus most attention on daily production and distribution, the archive is accessed when content is requested for reuse. These are the moments when an archive proves its value. Archive footage has not only cultural importance as historical documents (see also "UNESCO World Day for Audiovisual Heritage"), but also demonstrates its economic merits by being reused in production of new programs. For a broadcaster, those two concepts are tightly linked.

Figure 1. Archives that do not exist in this shape anymore: left: digitized obsolete carriers at ORF, right: Syrian archive destroyed in war.

Producing fresh content for television or radio is always linked to costs, just like archive footage was, when it was originally produced and edited. Keeping tapes safely in the archive comes with a price as well (e.g., air conditioning, space rental and maintenance, and player maintenance), but at the end of the day all the cultural and economic value stored in a broadcaster's archive is worthy of preservation—for the present and the future. It would be grossly negligent not to sustain an archive and its holdings or to allow the treasures contained to degrade, especially when the small fortune it cost to produce is taken into account.

2.2.1. Mass migration of physical archives

Having considered the threats to archives and the needs of the holding institutions, mass digitisation has turned out to be the obvious precondition for future survival of legacy archive content. This way all carriers in the physical archive will be transcribed into a digital file based repository (as virtual copies of the physical original). This should happen in a planned manner and with quality controlled processes. Of major importance is the well-orchestrated ingest of digitized carriers into an archive storage as well as writing an index of the created files into a central database. One of the problems broadcasters face, is that existing repositories used in Production Asset Management (PAM) tend to handle only file based information, ignoring physical existence of legacy archives.

3 Ilse Assmann, Quoting her experience with metadata outsourcing at M-Net / South Africa, Broadcast Section reports during IASA conference Washington, September 2016.

Further PAM´s are mostly optimized for specific content (i.e., film, or audio, or video) and support only a very specific production file format, which might be very likely not suitable for long term archiving (such as a lossless format), resulting in various PAM's inside one institution. Each of those production systems is equipped with its own storage and file management layer. So the need of a central management layer arises.

Industry has answered this need by extending PAM´s with additional Media Asset Management (MAM) systems—possibly addressing the need of archival descriptions and finding a way to help archives in both worlds, by copying database indexes to a kind of umbrella MAM and insisting on a jack-of-all-trades system. Typically MAM and PAM systems are tightly integrated and most compatible if provided by one vendor only. This makes the exchange of single systems quite difficult, and meets the interests of manufacturers.

The description of multi-carriers and pointing towards still existing archive carriers is only handled via some descriptive information via prefixed ID´s—in the case where this at all possible.

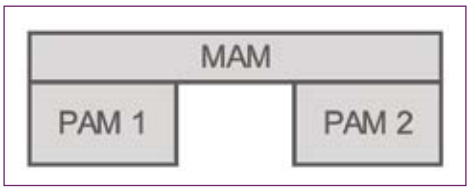


Figure 2. Tightly integrated PAM's to an umbrella MAM.

Facing the fact that legacy archive content should be archived for the long term, it is very questionable if digitized content should be ingested to such a tightly-knit systems cluster. Given the situation of changing PAMs and changing dissemination paths, a strategy can be to think of a lightweight asset management system, which does NOT include all production elements of editing and playout, but concentrates its management functions on the dedicated archive requirements. This lightweight and specialized Archive Asset Management system (AAM) resolves the stigma of abusing an existing PAM which might not be useable for the transition of physical archives to file based content.

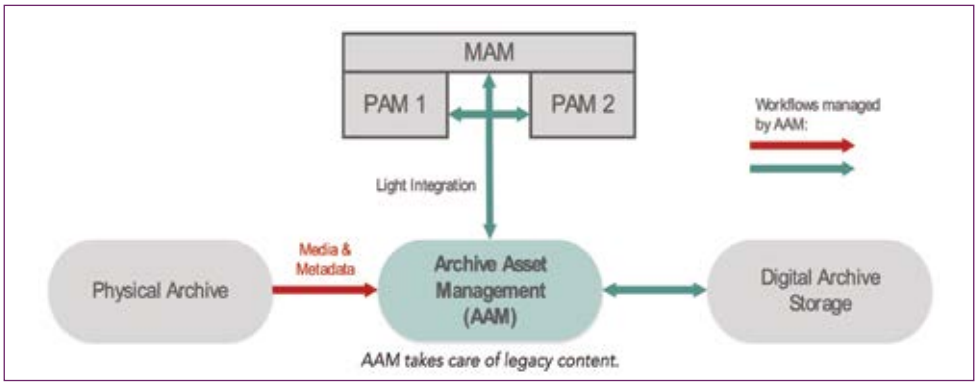


Figure 3. AAM takes care of legacy content.

2.3 Characteristics of specialized Archival Asset Management (AAM)

2.3.1. AAM ≠ PAM

The differences between an archiving and a production system cannot be stressed enough. Production Asset Management (PAM) systems seldomly fulfil all archiving requirements. Regarding the management of the various sources and different types of metadata, systems specialized in production will rarely meet the requirements.[4] It should be verified if they follow other fundamental archival principles as it is a common misperception to understand production asset management equally as archiving. The long-term preservation of digital assets within an archive asset management framework should enable the conservation of information following general archival guidelines. In the context of a broadcasting institution with different fields of activity (production, dissemination and archiving) it is difficult to find a jack-of-all-trades platform for all the stakeholders. Typically large MAM systems claim to fulfil these needs and have been developed in the past under the context of gluing many components together.[5] For archive management, it should be therefore considered that a specialized system, designed for the longevity of archive content could be a solution which allows for handling preservation at a higher speed than trying to solve all MAM problems of an institution in one go.

2.3.2. Specialized archive backend

An Archive Asset Management (AAM) system is a specialized archive backend that has to provide longevity to the content inside the digital store—and, some say that "longevity in an archival context is eternity plus one day."[6]

A well-designed AAM could therefore easily outlive the attached production environment with its tightly knit additional Media Asset Management (MAM), Production Asset Management (PAM) system, editing suites, playout systems, and possibly proprietary storage.

Those components are configured for best performance, are vendor specific, and highly customised. Moreover, they might have been set up for current media standards and will be replaced on a regular basis when production and distribution standards change. So that the regular exchange of components does not affect the stability of the digital archive, the AAM should be a separate system, unaffected by the production environment but coexisting with it and its associated technology. In order to enable the continual life cycle of an AAM system, it needs to run on standard IT equipment that can be updated and exchanged easily if the necessity arises. The AAM must not be locked to any vendor-specific hardware but be prepared for change and future development.

Furthermore, the prediction of Moore´s law requires the usage of an independent storage system which can be easily exchanged once new technologies arise. This is a major difference from many systems deployed in the storage and production domains.

4 "Canalizing the maelstrom of metadata: extensions on the hourglass model," Brecht Declercq (2016) http://www.den.nl/art/uploads/files/DECLERCQ%20Canalizing%20the%20maelstrom%20of%20metadata%20(2).pdf, last accessed 22.11.2017

5 TecmathAG Kaiserlauten (2000), then BlueOrder (2004),– significant milestones in MAM development happened in the YLE Metro project around 2007 as bridge between PAM, legacy TV databases and playout systems, later it has been acquired by AVID MAM (acquisition in 2010).

6 Peter Bubestinger, JTS Singapore, March 8, 2016.

The infrastructure situation at a broadcaster can be summed up as a wide range of different specialized systems, all fitting their purposes. The specialized AAM, in turn, would be the piece of the puzzle taking care of preservation and description of legacy content.

2.3.3. Serving production and distribution environments

Constant availability of archival footage in digital file-based form is a major performance factor. After digitisation, the entire workflow of ordering content from the archive is no longer dependent on physical legacy carriers and can be handled in the AAM by automatic business procedures without unproductive waiting times. Serving distribution channels quickly with unique archive content is a major asset for broadcasters or cultural heritage institutions. It can then be searched, browsed, and previewed in the central Archive Asset Management system. Exports from the archive system to the production system with live transcoding need to be processed with minimal delays. If big repositories use tape based storage such as LTO tape libraries, the storage systems have to be scaled according to the expected access requests so that no queue will build up. The automatic retrieval of content from tape storage technology and transcoding are the only waiting times in feeding content from the archive to production. The readiness to deliver to different existing and future channels may be fulfilled by an independent archive system, agnostic to playout destinations and future file formats.

In addition to as yet unknown platforms, current distribution channels could include:

- Internet Radio, Internet TV, Video-on-demand
- Asset Selling Platforms to re-monetize content
- New platforms serving university networks or schools
- Platforms aimed at content collaboration

2.3.4. Coexistence with other systems and separated access domains

OAIS is a conceptual framework for how to design a secure and future-proof digital archive. It describes how the system architecture needs to have transparent and separated domains for producers of content, the actual archive system, and the distribution channel. In order to follow this design, an AAM system and the peripheral infrastructure should be structured in separated access domains. The AAM itself is located in the Archive Domain. This is traditionally the same physical department as the legacy archive or the digital archive storage, and any access transaction is managed by the AAM utilizing preconfigured workflows. The production and distribution systems themselves are separate domains. Any access transactions between AAM and PAM / MAM systems are also managed utilizing preconfigured workflows, mostly by the AAM, depending on the implementation design of the systems. Any access to the archive, such as search queries, media previews, or orders of content are triggered from user interfaces that are located in the user domain. Access procedures are also managed by the AAM and should be restricted with user rights management according to access permissions. By designing a digital broadcast archive in this manner, each element in the infrastructure stays independent, meaning it can be replaced if necessary without affecting the entire infrastructure; only communication between the systems has to be reconfigured. Further, the AAM ensures that the archive stays consistent and secure. No unauthorized access to archive essence is permitted and different access levels and permissions to alter the archive content can be managed with user rights. All transactions and manipulations inside the archive are executed by preconfigured workflows, this way every change is based on the same business processes, resulting in uniform archive content.

Digital Archive Storage in use has to be migrated or even changed in a 3–5 year period to overcome obsolescing technology—having an open interface to HSM or general storage systems helps you to fulfil this task.

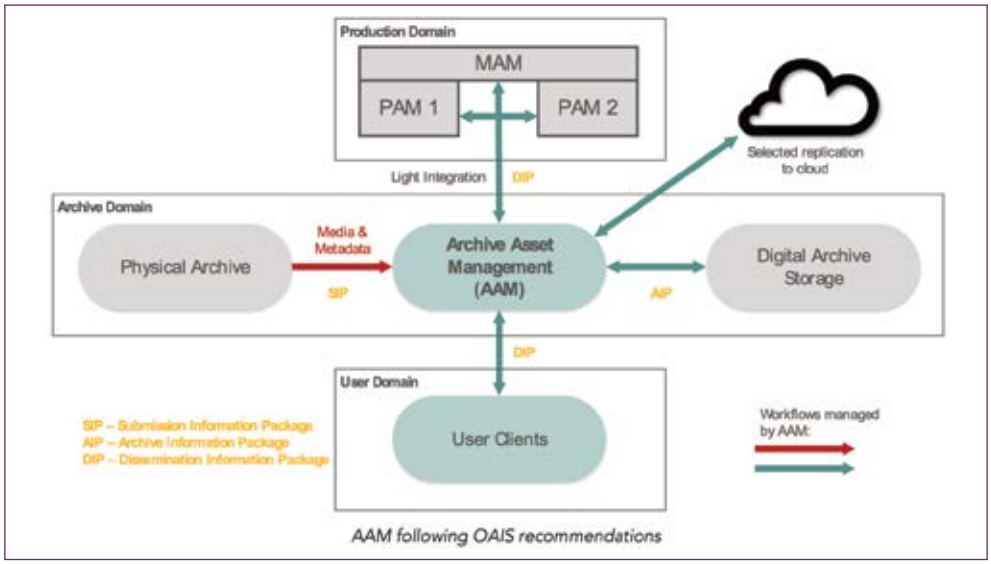


Figure 4. AAM following OAIS recommendations.

3. Essential AAM Elements

Archive Asset Management should be built on three main pillars: media, metadata and workflows.

Media	Metadata	Workflows
■ Archive essence data ■ Ensures best practice in media management	■ Description of media (essence) data ■ Metadata is key to finding and accessing archive content ■ Metadata covers rights information ■ Archive: black box or well- structured catalogue?	■ Processing of information ■ Ensures consistency of archive and business procedures ■ Provides workflow management

3.1 Media

Media is understood to be the archive essence data, the actual manifestation of archive content. To fulfil the purpose of an AAM, the system should ensure best practice media management. The purpose of media is that media files become content through our ability to access them.

3.1.1. Parallel management of multiple representations of media

Archive Asset Management does not just organize archive essence media. For the usage of the archive system additional media management features need to exist. One of them is the handling of multiple representations of media. A typical scenario is that media exists in the archive file format used for long term preservation of content, but high-resolution files are not practical for preview (streaming over network and retrieving from the archive storage), so preview proxies, a low resolution copy of the same content are typically provided. Potentially a third version of media has to be managed in an AAM. In NOA´s mediARC systems, for example, this is called auxiliary media, characterized as supplementary versions of the same media. An example could be a common distribution format likely to be used again (e.g., DCP in cinema distribution) or any original file format in which the content was produced (in this case it could be important to keep the original if any significant properties are bound to the original file format). Ideally, internal working formats that use mathematically lossless compression and archival formats that use mathematically lossless compression will be chosen, so no significant properties should get lost in transcoding digital media to an archival format.

3.1.2. Normalisation to one file format

An important approach when building a new archive is to avoid multiple archival master formats. Looking into today's archive shelves, you may find around 20 different physical carrier formats and each one of them requires specific knowledge, specific equipment, and specific treatment. In a file based digital archive, formats that are agnostic to content can be chosen. Some fundamental rules to guide the decision are: linearity, lossless compression, and safeguarding of the original's significant properties such as resolution or colour space.

If an archive is designed with a normalized format that uses mathematically lossless compression, it will be much easier in 15 to 20 years, to migrate from one archive format to another, rather than from twenty different formats. Additionally, streamlined business processes without generation loss are possible when using a lossless compressed format. This results in a transcoding history without generation loss.

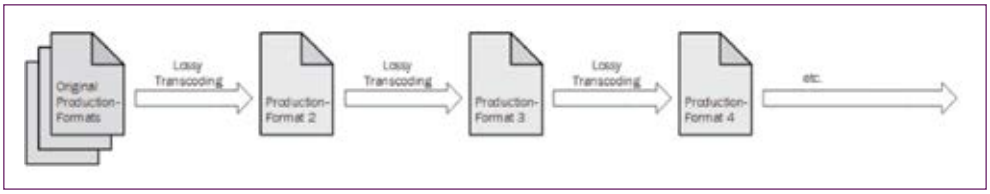


Figure 5. Transcoding history with generation loss.

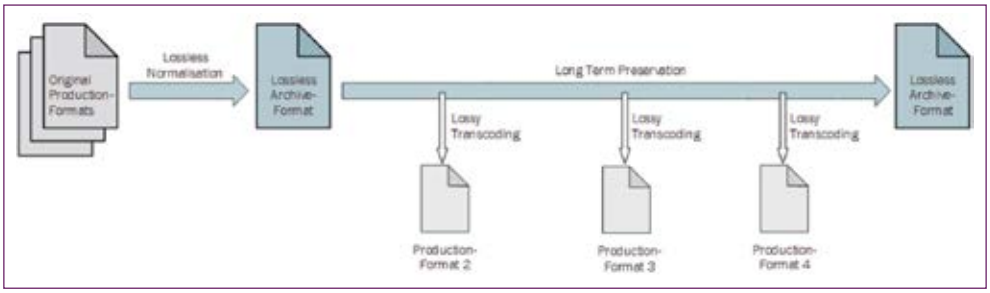


Figure 6. Transcoding history without generation loss.

3.1.3. Archive file format

In the context of digital archiving, the choice of the correct video file format for legacy archiving has been one of the predominant topics of discussion for a long time. A few concepts should be considered to guarantee long term preservation of media. The most important is that archival formats that use mathematically lossless compression should be facilitated in an Archive Asset Management system. Often the argument is brought forward that a mathematically lossless archive format will raise storage costs (as opposed to using lossy compression formats). But storage cost is decreasing continuously. The fact that the radio archives community had intense arguments for 256kbit/sec encoding formats in 1995 because of storage costs seems ludicrous today (and arguing for DV25 will seem similarly strange in 2026). The time required to digitize material (most projects have durations of several years) will penalise any decision that optimises according to storage cost. The minor increase of storage costs is well worth the advantage of not reducing quality during ingest. Furthermore, the archival format constitutes a real essence master, as it represents the original content in its most authentic quality and allows future format migration without introducing further quality loss. Additionally, it is good practice to build an archive with one media format per media type; this reduces operational intervention during future migration, making it faster, cheaper, and simpler to maintain than multi-format archives.

Audio: A common ground has been established for audio archiving that is based on 48–96 kHz / 24bit PCM samples stored in a RIFF-based Broadcast Wave File. This will be adequate for both uncompressed originals and currently compressed media. However, in the cases of currently compressed media, associated metadata (e.g., from MP3 tags or MP2 information) will need to be retrieved and kept as separate metadata.

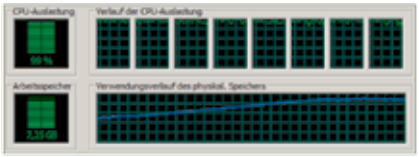
Video: The situation is more complicated here. We see the following situation in archives when it comes to selecting a normalised file format for SD material:

Archives with high demands on materials (e.g., the US Library of Congress)	Broadcasters (e.g., ORF, YLE)	New Approach (e.g., RTVSLO, Slovak TV, Sharjah Media Corporation)
Lossless format (JPEG 2000)	-	Lossless Format (FFV1)
Mezzanine Format (DVCPRO50)	Mezzanine Format (IMX50, DVCPRO50)	-
Preview Format	Preview Format	Preview Format

When asking why we need a mezzanine format, in the first case, it gets clear that the available software implementations of JPEG 2000 seem to be clumsy if transcoding times from archive to production take unnecessary long:

Encoding speed comparison from SD source to MJPEG2000 and FFv1
file length = 600seconds (10min)
Intel Core i7-2600 CPU - 3.4GHz - 4 Cores+HT, 8GB RAM
(SourceCodec HuffYUV: PAL 8bit YUV422 720x576, interlaced and not sq)

Motion JPEG 2000 - Lossless Mode
Encoder: Total Code Studio 2.5 (Mainconcept)

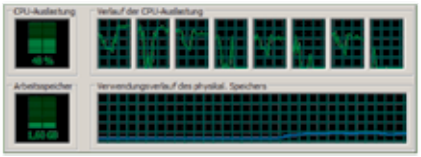


CPU load: 99%
RAM load: 7.25GB

Speed: 49,6 FPS
0,5x realtime
(finished after 5min 02sec)

MJ2 FileSize: 5.38GB

FFv1 Level 3 (slices 9))
Encoder: FFmpeg 2.2



CPU load: 48%
RAM usage: 1.60GB

Speed: 130 FPS
0,19x realtime
(finished after 1min 55sec)

AVI FileSize: 5.41GB

We have seen that FFV1 has gained traction against JPEG 2000, perhaps because of the situation below (as of December 2017):

	FFV1	JPEG 2000
Mathematically lossless?	yes	yes
Container	MKV (Matroska)	MXF (Material Exchange Format)
Pacemakers	Internet Community & Archivists	Commercial Companies & FADGI
Normative Institution	IETF	SMPTE
Specification	Cellar	AS-07
Disclose working Source Code of Encode Technology?	Yes (Open Source - FFMPEG)	No (Kakadu, Comprimato)
Standard ready?	no	no
Working pre-versions	Yes – 16 years – open source	EVS – yes for 4 years (1 company)
Computing Power	low	high
Typically suitable for? ($$$)	Small Budget Archives to Large Institutions	Large Institutions

By encouraging the open FFV1 video format (currently in the process of IETF standardisation), a future-proof encoding format to serve the purpose of building long-term video repositories may be found. It also might be interesting to see that adoption has taken place even with the standard not being ready, as working (open source) implementations exist.

Broadcasters still tend to have a short-term perspective and often decide not to use lossless codecs, especially as lossless JPEG 2000 has its issues in terms of resources and supporting applications. With FFV1 there are currently new options being explored and it can therefore be considered as not only forward-looking, but also viable for a number of color spaces and resolutions up to 24 bit (recent activities include discussion about FFV1 as a replacement for film DPX formats[7]). It presents a concept of storing mathematically lossless compressed data at a relatively small extra storage cost in comparison to the lossy compression alternatives such as IMX.

3.1.4. Partial file retrieval (PFR)

Retrieving footage from the archive and providing it for production is often a time-critical undertaking. News broadcasts in particular have to access content as fast as possible. Most of the time, short segments of content are ordered; however, retrieving the file stored in an LTO tape library may take some time. With high resolution or very long video files, the retrieval process can take many minutes, especially if there is a queue in the LTO library because of too few LTO drives. Even though PFR can be considered less and less important, with normalisations to one file format file sizes of up to several 100Gb are not unusual (e.g., normalised DPX sequences to FFV1, or analogue VHS legacy recordings in FFV1). This could be a single news clip that is part of an entire broadcast recording. Times that occur when retrieving this file from an LTO 7 tape are 11 seconds to load the tape in the drive, and a further average winding time of 40 seconds, but the crucial amount of time is the actual reading time with 12 minutes for a 104 GB FFV1 file (SD, YUV 4:2:2, 10bit).[8] All 104 GB have to be copied to the production storage and the content then has to be trimmed to the one minute requested duration. When AAM and Hierarchical Storage Management (HSM) allow partial file retrieval, just the requested segment will be retrieved from the LTO tape, reducing the waiting time drastically. Tape loading and winding times stay the same, but a 1-minute segment of the same content (about 0,85 GB) will be retrieved in seconds. How this performance enhancement impacts on production speed, especially in the context of HD and film content is obvious, when, for example, 50 requests per hour are the benchmark which needs to be fulfilled with typically 8–10 tape drives in the HSM system.[9]

7 Various public discussions, No Time To Wait! Symposium Vienna, Österreichisches Film Museum, November 2017.
8 "IBM LTO Ultrium 7 tape drive performance white paper," Support, IBM, accessed September 29, 2017, http://www-01.ibm.com/support/docview.wss?uid=tss1wp102594&aid=1.
9 "EBU Archives Report 2010", last accessed September 29, 2017, https://tech.ebu.ch/docs/techreports/tr006.pdf.

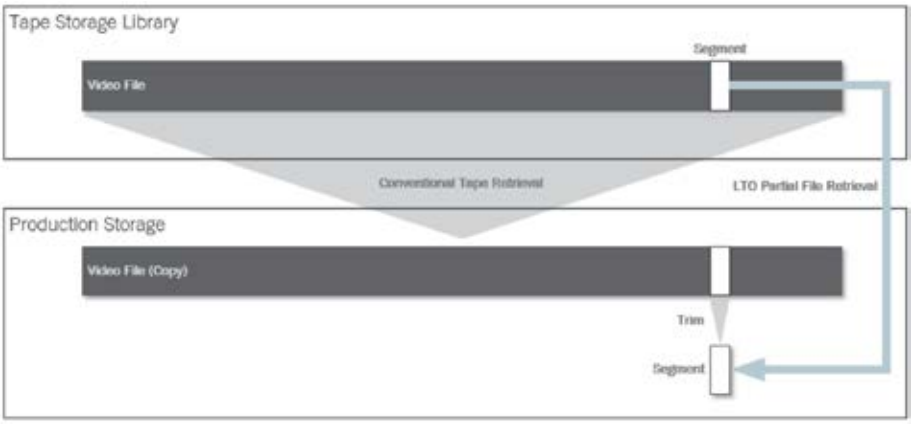


Figure 7. Schematic partial file retrieval.

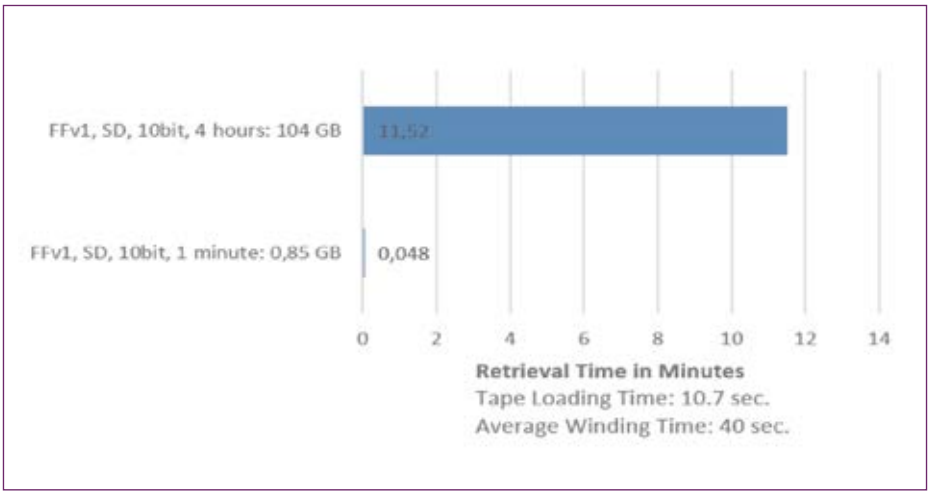


Figure 8. Comparison of retrieval times on LTO 7.

3.2 Metadata

In any library, the catalogue is the heart of the archive. Essence data retrieval in an archive is only as good as the cataloguing; meaning enriched descriptive metadata is required. With sufficient existing metadata, media becomes content. Adding rights information makes it an asset. The existence of metadata annotation makes the difference between an accessible archive with a well-structured catalogue and a black box full of unknown media.

3.2.1. Customizable metadata schemes

Broadcaster's archives typically have developed self-built metadata-only database schemes over time or may still rely on written cards as depicted above. Seldomly, has an archival standard found its way into that scheme. Our experience has shown that a variety of ontological understandings exist which may vary from carrier-based descriptions (typically) towards content-based annotations.

In any case, flexibility has to be applied (from archives, but also from vendors) to the fact that different archives can have different needs when migrating to an AAM. Broadcast archives in general will have quite similar necessities to each other, especially in comparison to libraries or other heritage institutions. An AAM has to be flexible enough to allow for the creation of extensive custom metadata schemes, reflecting the institution's cataloguing requirements.[10] As different item categories need different types of description, various logical entities (categories) will be conceived. Commonly used categories in the legacy archive sector of the broadcast industry are "Carrier", "Program", "Person", or "Title". Each category has to be defined at the field level with various options, including the name of a field, the type of data to be inserted (e.g., integer, character, or date) and the style in which the field can be edited (e.g., drop down menus, mask edits, or string edits).

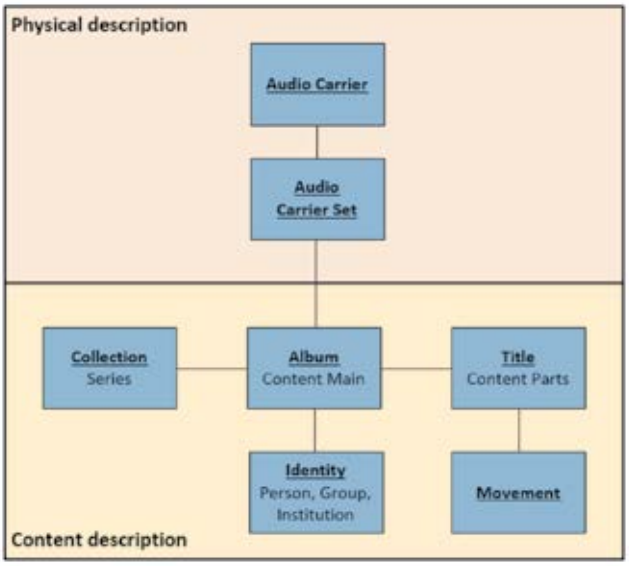


Figure 9. Example of a metadata scheme used for audio description.

3.2.2. Semantic metadata structure: FRBR and long tail search

To describe the ontological structure of objects and their relationships in a sufficient way, a strict hierarchical relationship between entities is not flexible enough, however by allowing an unlimited number of link types between entities that problem can be overcome. With qualified link types, people, content, documents, and contracts, for example, can be linked to each other creating perfect semantic metadata. It is a best match between object related descriptions and relational descriptions. Any object can be linked with another object by a qualified link. This functionality allows the implementation of many important metadata standards using FRBR (Functional Requirement of Bibliographic Records) such as the EN15907 recommended by FIAF.

10 Filip Kwiatek and Agnieszka Slomska, "How we managed our assets at NINA – The problems and challenges we have faced," In *Changing Sceneries – Changing Roles Part VII, Setting the standard in second generation MAM systems and metadata, 80-100*. Glasgow, FIAT/IFTA Media Management Commission 2015.

As a result, complex search queries can be defined for selectively finding content:

"Songs Edited in England with Mark Knopfler as composer, except between 1990 and 1991"
"Films directed by Fritz Lang, produced in the U.S. between 1936 and 1945, starring Spencer Tracy."

Defining such complex search queries is also possible by using Boolean operators, but doing so requires knowledge on the side of the user as a prerequisite. A user will just search for some (combined) attributes if he/she knows, or highly suspects the query will yield results. With an AAM that supports semantic linking, the possibility of serendipity is given. If a researcher can find content by lucky coincidence, without suspecting its availability, the hidden treasures of an archive can be unlocked as they are findable in a certain context. To a broadcaster this creates the opportunity to use unknown, rarely seen, or unexpected content for creative programming. By introducing semantic linking, the archive becomes increasingly mapped, and a user can practically navigate the archive using the established links while orientating him/herself on beacons of known contexts.

The image below exemplifies some possibilities of how content can be described when using related metadata. In this case a classical music album exists as an item in the archive. It consists of different parts that are related to different works. Various people act in different roles on the manifestation or work level. A user browsing the archive can enter the search at any known point and then explore the existing content without knowing about its existence, or about its inter-relations.

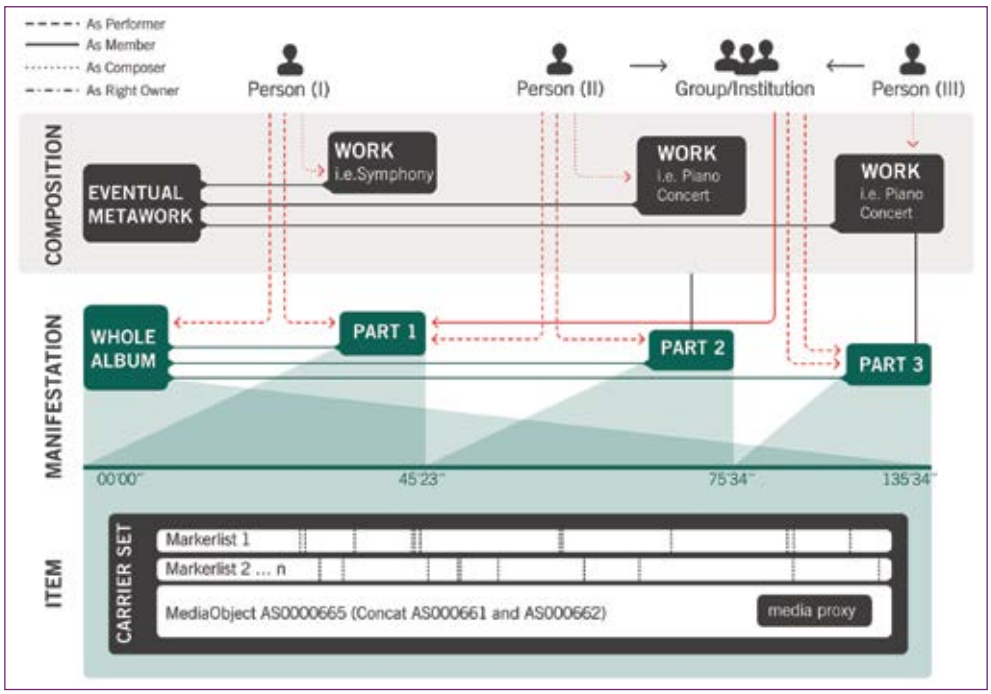


Figure 10. Metadata relations map the archive for semantic navigation – here as example from NOA mediARC.

3.2.3. Rights

One of the most difficult things when monetising content, is to have a cleared rights situation with archival content to make it a real asset. Whereas some countries do not have legal restrictions—or simply do not care—others struggle indefinitely with clearing rights for content, especially when exposing content to larger audiences. One of the functions of an AAM is to be able track and collect related existing contracts and to provide selective accessibility.

3.2.4. Post-Migration Consolidation and Revision History

When a repository gets migrated to an AAM, consolidation operations such as de-duplication have to be offered to solve possible metadata inconsistencies. During the lifecycle of a repository, metadata is likely to be changed over time. This implies the risk of losing correct information. Changes to metadata have to be automatically recorded as new revisions of the item. As a result, an item history is created over time. This way every former version of an item can be reviewed or even compared with another version. In this way, the cataloguing history of an item can be tracked and changed—metadata will not be lost completely if an error occurred during an inventory process.

3.2.5. Workflows

When coping with production systems and extensive ingest business processes with regard to both the file management and the workflow management, it is necessary that a workflow engine takes care of all information processing and workflow administration. Typically workflow management modules are located in 3rd party tools or are part of a monolithic MAM. Instead workflows could be allocated for all transactions that are OAIS relevant within the AAM, where OAIS consistency is also required. This guarantees consistency of the archive and all business procedures. This is especially important for the handling of large-scale automatic processes such as migration, mass ingest, delivery to production systems, or replication to cloud-based catalogues.

All interaction with essence data inside the archive has to be handled through preconfigured and monitored workflows. This is especially true for ingest, dissemination, and metadata enriching processes so that the archive system continues to conform to the OAIS reference model. Workflows of an AAM have to be designed to make business procedures manageable and plannable. Examples include delivering assets from an archive, validating metadata edits, or an extended QC process. A workflow administration area lists all running workflows and allows them to be paused, resumed, or reset and displays the current status of a workflow. During execution every workflow writes a log file for subsequent analysis.

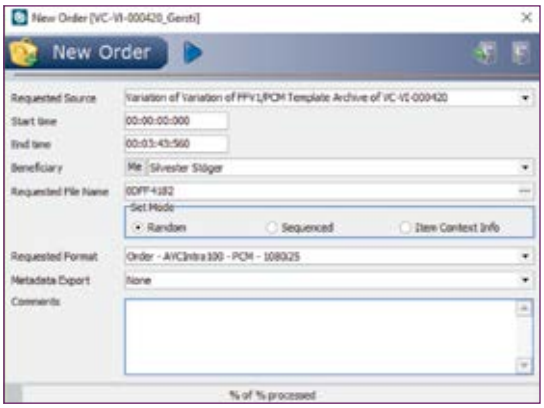


Figure 11. Workflow (NOA mediARC) describes visual interface to archive users to order from a lossless FFV1 archival format towards a desired target archive format.

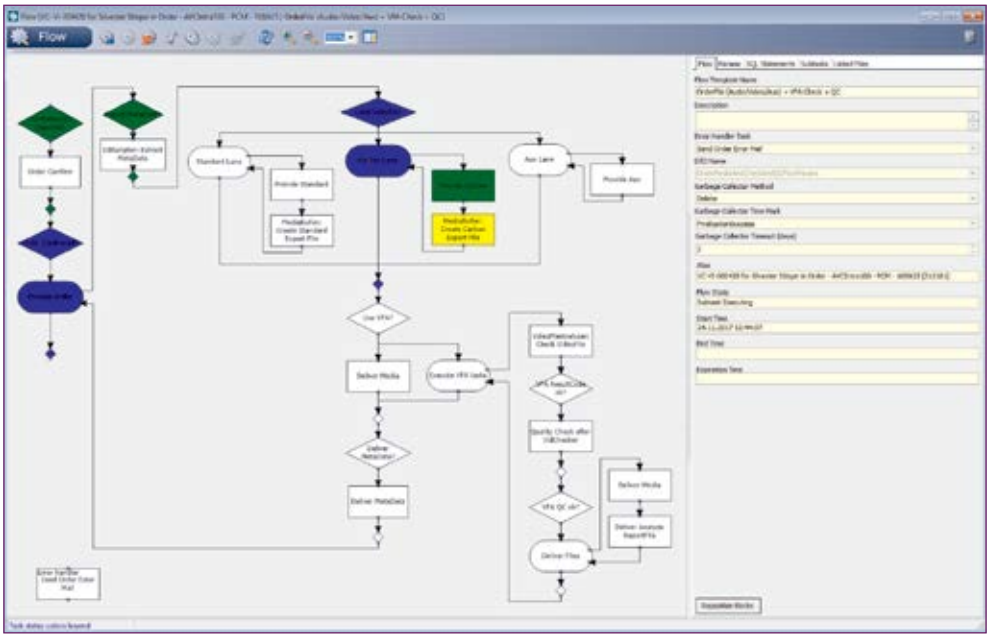


Figure 12. Workflow (NOA mediARC) describes the tasks in the background fulfilling export from a lossless FFV1 archival format to AVCIntra 100 incl. 3rd party video QC engine.

4. Conclusion

Broadcast archives need to preserve content and its stored value for the institution. In this context broadcast institutions become very similar to cultural heritage institutions that have to follow archival principles in order to safeguard their legacy collections. While one focus of broadcast institutions is naturally on their core business—production and acquisition of new content—the task of conserving self-produced unique archive content follows different principals.

A core topic for Archive Asset Management is the deployment of a specialized archive back-end following OAIS principles and focusing on the three main pillars: media, metadata, and workflows. These pillars include normalized file formats, coherent media management, semantic metadata description, and sufficient annotation that is key to good archive access in the future. Any AAM system that follows the OAIS principle will benefit from an integrated workflow engine available to provide consistent and automated business processes into and out of the digital archive repository.

COMPRESSED VIDEO QUALITY

Iain Richardson, Vcodex Ltd., UK

1. Introduction

The concept of video compression goes hand in hand with the switch from analogue to digital video technology that has taken place over the last 25 years. Video delivered to televisions, computers, and smartphones typically arrives in a compressed form. The bandwidth and file size savings that compression provides are a significant benefit for consumer and business applications, making it possible to send and receive high-definition video over limited capacity networks. However, for digital archive applications, compression can be problematic, especially when it introduces loss or distortion into a video signal.

'Born digital' often means 'born compressed' and it is increasingly likely that newly-created digital video material will have gone through at least some level of lossy compression. For this reason, it is important to understand the effect of video compression on visual quality. In this paper, I will introduce the concept of video compression and its relationship to video image quality. I will consider the factors that influence visual quality, including technical factors such as codecs and coding parameters, as well as the complex and only partly-understood factors that govern our perception of moving images. I will introduce methods of measuring and quantifying video quality and show how it is possible to compare the quality and performance of video processing systems, despite the limitations of quality measurement.

2. Compressed video

Video is compressed using a video encoder and decompressed using a video decoder. The encoder/decoder pair is known as a 'codec'.

Figure 1 shows a video encoding and decoding scenario. A video source is encoded to produce a compressed bitstream or file that may be transmitted or stored. The compressed file is decoded to produce a video output that can be displayed. The compressed file typically occupies less space than the original video source, making it easier to store or transmit. The compressed file contains elements to aid in storage, transmission, and playback, such as resynchronisation markers, which help a decoder handle transmission or storage errors.

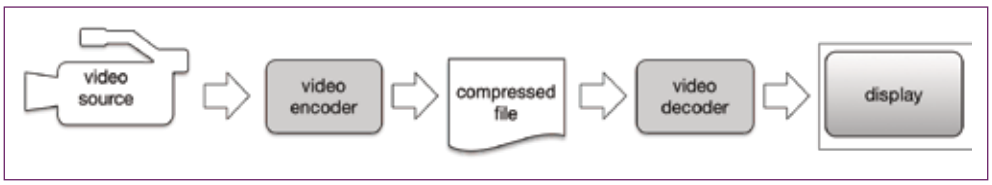


Figure 1. Video encoding and decoding.

There are many image and video codec formats. These include ISO/IEC and ITU-T international standards such as MPEG-2, H.264/AVC, and H.265/HEVC; open source formats such as VP8 and VP9; and proprietary codec formats (Richardson, 2017). A video coding standard specifies a compressed bitstream format and a method of decoding a compressed bitstream.

Video codecs may be lossless or lossy. A lossless codec creates a compressed bitstream that can be decoded to re-create an identical copy of the original video sequence. Lossless video codecs typically provide modest levels of compression, such that the compressed bitstream is around 2x–4x smaller than the original video clip. A lossy codec discards information dur-

ing compression so that the decoded video clip is not identical to the original clip. Typically, a lossy video codec can achieve much higher compression than a lossless codec, 50x or more, at the expense of degradation in video quality. I will discuss the nature of lossy compression in Section 4.

2.1 Compressed video example

A source video clip *Tractor* consists of approximately 28 seconds of video. Each video frame is 1920x1080 pixels (1080p format) and there are 25 frames per second. The original video file occupies 2.15 GBs of disk space.

The source file is encoded using the HEVC/H.265 video codec, using four different compression settings. The following table shows the file size for each setting. Lossless compression yields a compression ratio of 2.4:1, i.e., the compressed size is 2.4x smaller than the original. Three levels of lossy compression, low, medium and high, produce compression ratios of between 63:1 and an impressive 1343:1.

File	File size	Compression ratio
Original, *Tractor*	2.15 GBs	1:1
Lossless compression (HEVC)	854 MBs	2.5:1
Low compression (HEVC)	24 MBs	63:1
Medium compression (HEVC)	6.5 MBs	330:1
High compression (HEVC)	1.6 MBs	1343:1

Figure 2 illustrates the effect of each compression setting on a single frame of the video clip. At the top left is a close-up of a frame from the original clip. The slight blurring on the wheels and background is due to the movement of the tractor relative to the camera. At the top right is a close-up of the same frame from the low-compression version. It is difficult to see any difference, even though this uses lossy compression. When the full sequence is played back at 25 frames per second, it is even more difficult to see any difference from the original clip. This low-compression version could be described as *visually lossless*, i.e. visually indistinguishable from the original, even though the decoded video data is not identical to the source video.

The medium compression version, lower-left, has some visible degradation, for example around the lettering on the tractor's body. The high compression version, lower-right, is obviously distorted, though it is still recognizably a tractor!

Figure 2. Compression and video quality.

3. Compressed Video Quality and Digital Preservation

The effects of lossy compression can range from very obvious to nearly imperceptible. Why is it important to consider these effects in a digital preservation context?

Since the 1990s, more and more moving image content has been born digital, i.e., created and stored in a digital form. Much of this content is also born compressed. For example, video material recorded on a present-day device such as a camcorder or SLR is increasingly likely to be captured in a compressed form, as Figure 3 illustrates. The camera device has a video encoder built in and video is encoded before recording onto an SD card or other storage. Consumer cameras and camcorders capture video in lossy formats such as H.264/AVC. At the time of writing (2017), only high-end motion picture cameras are capable of recording lossless RAW video. Entry-level professional video cameras, high-end consumer or prosumer cameras, camcorders, SLR cameras, and smartphones capture only lossy video in formats such as MPEG-2 Video, H.264/AVC, and H.265/HEVC.

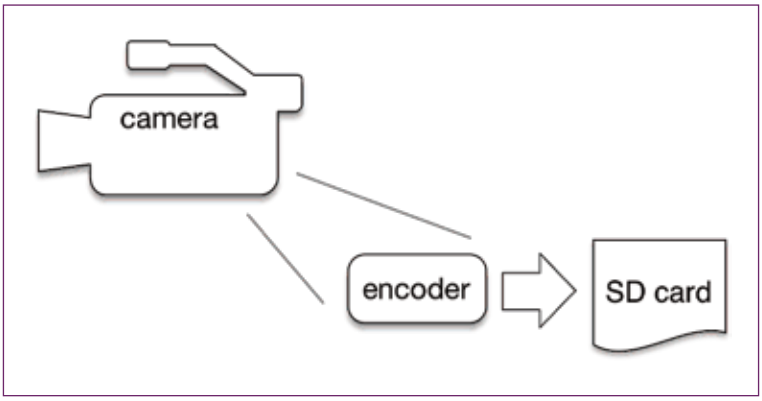


Figure 3. Camcorder capturing in compressed format.

This means that newly-created video material received by an archive is increasingly likely to originate in a compressed, lossy format. Any processing step can introduce further loss, including but not limited to:

- Editing
- Post-production
- Resizing / resampling
- Colour space conversion
- Transcoding for distribution
- Transcoding for streaming

For example, each of the stages shown in Figure 4, which may be entirely outside the control of an archive, may introduce quality loss in the video signal. From a digital preservation perspective, it is important to understand the mechanisms that affect video quality and how to measure quality. In the next section, I will look at issues that specifically affect a user's perception of compressed video quality.

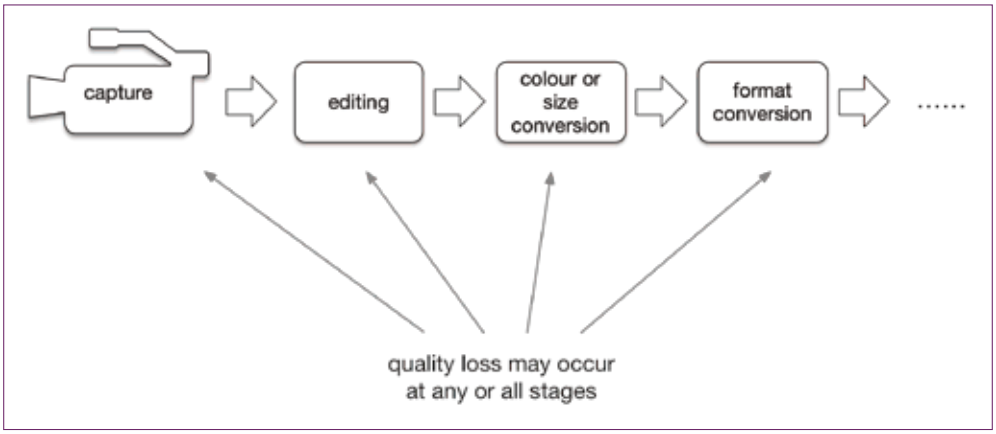


Figure 4. Video processing and quality loss.

4. What Affects Video Quality?

Many different factors can affect the quality perceived by a viewer of a video clip. I will group these factors into system factors, content factors, and human factors.

4.1 System factors

System factors are technical elements that influence video quality. These include encoder settings, codec format, codec implementation, and transmission issues.

In a video codec such as H.264 or HEVC, a number of encoder settings affect the amount of compression. In particular, the quantization parameter (QP) controls the amount of compression and the amount of quality loss. Quantization discards less significant information in a video scene. In general, a higher QP gives increased compression but also increased distortion in the video clip.

Each video coding standard uses a different set of algorithms to compress and decompress video. These differences have an impact on video quality, especially as compression increases.

For example, differences in transform block sizes, prediction types, and deblocking filter designs influence the way in which video quality degrades as compression increases.
Two video encoders may be compatible with the same video coding standard but may be implemented using very different design choices. This in turn can significantly affect the visual quality at different compression ratios.

Errors during storage or transmission can introduce significant distortion when the video clip is decoded. Bit errors and glitches in a compressed video stream are often expanded or magnified when the clip is decoding, so that a single error can affect many frames of video. Transmission delays can lead to freezing / buffering which has a detrimental effect on perceived video quality.

4.2 Content factors

Content factors are inherent properties of the video clip that affect the way a human observer may notice, or may not notice, video quality losses. For example, we can see only a certain level of detail in an image. Details smaller than this threshold are not visible. We can see a greater level of detail when the image is static or moving slowly. When objects in a video scene are moving faster, relative to the position of our gaze, our sensitivity to detail goes down.

Our perception of visual scenes is influenced by masking. With spatial masking, we are less likely to notice small changes in a detailed or busy area of a scene. For example, an error or distortion effect will be very obvious in the top section of Figure 5 and least obvious in the semi-random texture of the beach in the bottom section. Temporal masking means that we don't tend to notice details such as errors when there is a sudden, significant change such as a cut between scenes.

Figure 5. Errors and distortions will be most obvious in the top section of this scene.

What this all means is that we are more likely to notice errors and distortions in less detailed, slower-moving parts of a video scene and less likely to notice errors in highly detailed or rapidly changing parts of a scene. This in turn means that the type of video content may affect our perception of video quality. For example, we may rate the quality of a fast-moving or detailed scene *higher* than a slow-moving or less-detailed scene, even though the same amount of image degradation is present.

4.3 Human factors

Human factors are aspects of our environment, experience, and attention that affect how we perceive video quality (Callet and Niebur, 2013). When we are looking at a video image, the environment influences our perception. For example, light levels in the room, viewing distance, the presence or absence of backlighting, and even the level of physical comfort can influence an observer's opinion of the image.

While a very large amount of visual information reaches the retina (Figure 6), the amount of information we can attend to at any one time is limited to less than 10kbits per second, according to Anderson, Van Essen and Olshausen (2005). Because of this, we fill in much of the visual scene based on our experience and expectation of how the visual world works. Hence, the human observer can only really attend to a small subset of a displayed video image. Furthermore, the amount of data that is retained in medium- and long-term memory is even smaller. This means, for example, that our perception of video quality is dominated by the most recent 5–10 seconds of video (Moss, et al., 2016).

Figure 6. Visual attention and information content, adapted from Anderson, Van Essen and Olshausen (2005).

Our opinion of video quality is influenced by factors such as the presence or absence of human figures, perhaps because we learn to pay particular attention to other humans, and by whether or not we have a task to carry out. For example, we perceive visual quality differently if we are carrying out a specific task when watching a video clip, compared with passively watching a video (Zhong, et al., 2004).

A human observer's attention tends to be attracted to unusual or unexpected items in the visual field. There is some evidence that the distortions due to high compression can disproportionately affect our perception, because they stand out and attract attention (Redi, et al., 2011).

Our understanding of the way a human observer acquires and processes visual information is still only partially complete. The complexities of the active process of human vision (Findlay and Gilchrist, 2003) make it exceptionally difficult to measure a subjective concept such as video quality.

5. Measuring and Comparing Compressed Video Quality

The range of factors discussed above make it difficult to measure video quality accurately and consistently. Our perception of a visual scene is fundamentally subjective and no two individuals will have exactly the same perception of a video clip. At most, we can make an approximate evaluation of quality, either through experimental assessment by human observers— **subjective quality assessment**—or through the use of measurements and computational methods—**objective quality measurement**.

5.1 Subjective assessment

Subjective quality assessment involves determining video quality based on the opinions of human observers. It is typically carried out by asking multiple observers each to rate the quality of multiple video clips and then analysing the results.

Many different subjective quality assessment methods are described in the literature (Pinson and Wolf, 2003) and in several industry standards such as ITU-T BT.500 (ITU-T, 2012). For example, the Double Stimulus Continuous Quality Scale (DSCQS) method presents the viewer with (A) an unimpaired reference clip and (B) the same clip after it has passed through a system such as a video codec (Figure 7). The viewer is asked to give each clip a score by marking on a line with five intervals ranging from Excellent to Bad. Each viewer is asked to rate a number of pairs of original and modified clips. The order of clips is randomized so that the viewer does not know which is the original and which is the modified version. The results from multiple viewers are combined to give a Mean Opinion Score (MOS) which indicates the subjective visual quality of each sequence under test (Streijl, Winkler and Hands, 2016).

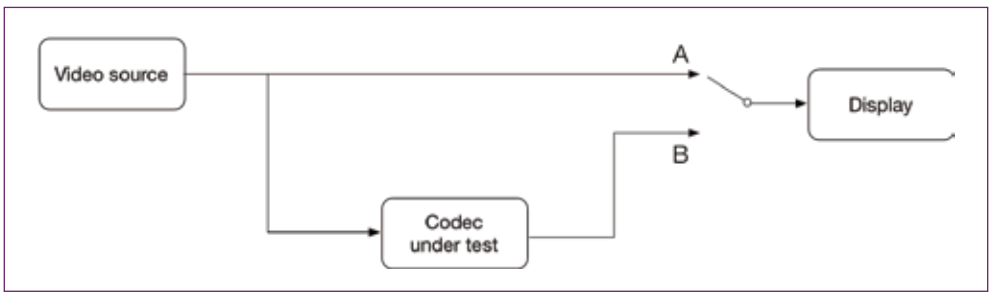


Figure 7. Double Stimulus quality testing.

The results of a subjective quality test can vary depending on the viewer and on the sequence under test. It is therefore recommended to repeat each test with multiple clips and multiple assessors. Carrying out subjective quality tests with many assessors is time consuming and expensive. Because of this, objective metrics, i.e., quality measurements that can be calculated automatically, are often used instead of, or as well as, subjective tests.

5.2 Objective measurement

Numerical measures of image distortion include Mean Squared Error (MSE) and Peak Signal to Noise Ratio (PSNR). PSNR is widely used for estimating distortion in compressed images and video. It is computationally simple to calculate and produces a single number. A higher PSNR should equate to better image quality. However, simple numerical measures such as PSNR do not fully reflect the way human observers notice, or do not notice, quality degradation. For example, Figure 8 shows two close-ups from video images. Both *Tractor* (left) and *Snow Scene* (right) have approximately the same PSNR, i.e., the same numerical level of distortion compared with the original video clips. However, it is much easier to notice the quality loss in *Tractor* because the large, homogeneous and recognisable image features are clearly distorted. On the other hand, the distortion in *Snow Scene* is masked by the detailed, semi-random textures of the tree branches.

Figure 8. Tractor (left) and Snow Scene (right), approximately the same numerical level of distortion (Peak Signal to Noise Ratio).

Many attempts have been made to develop image and video quality metrics that more accurately reflect the results of subjective quality assessment. Several objective quality metrics are presented in ITU-T Recommendation J.247 (ITU-T, 2008). The Structural Similarity Index (SSIM) is reported to perform well compared with other objective metrics (Wang, et al., 2004). Each of these metrics attempts to model the visual effects introduced by distortions such as blurring and blockiness, and to provide a numerical estimate of subjective video quality. Objective metrics have varying success in predicting subjective quality.

5.3 Comparing performance

Despite the challenges and limitations of subjective and objective quality measurement, it is at least possible to **compare** the performance of different systems. For example, if we consider a single video clip coded in multiple ways and at a range of compressed bitrates, then most of the well-known subjective or objective quality measures will give an indication of relative performance.

If we measure the quality of the clip at a series of compressed bitrates, we can obtain a **rate-distortion curve** such as the curves shown in Figure 9. This example shows four rate-distortion curves. The upper curves are generated by coding Video Clip A using two different lossy video codecs, Codec A and Codec B. Each point on the curve records the average bitrate and quality for a single coding pass, i.e., for a complete encoding and decoding process using a single set of parameters. By repeating the coding process and changing the coding parameters, we can obtain a complete curve. For example, increasing QP will produce a video clip with a lower bitrate and a lower quality. Repeating this with multiple QPs produces a curve such as the examples in Figure 9. If we repeat this process with two different video codecs (Codec A and Codec B), we can compare the performance of these codecs across a range of compression bitrates.

For Video Clip A, Codec B performs consistently better than Codec A, i.e. the quality of the decoded video clip is better at every bitrate. If we repeat this for a second video clip, Video B, we can expect to get a different set of curves. In the example of Figure 9, the two codecs perform very similarly to each other when compressing Video B. Codec A is slightly better at low bitrates, i.e. the decoded quality is slightly higher, but Codec B is better at high bitrates.

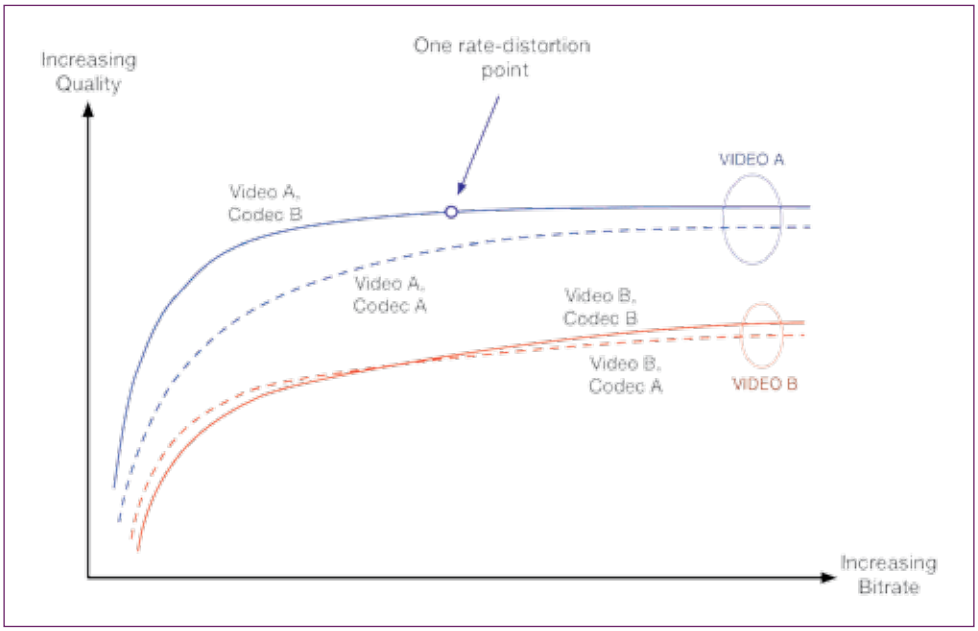


Figure 9. Rate-distortion curves : two clips and two codecs.

Let us consider a real example. Figure 10 shows subjective test results for two HD video clips, *Campfire Party* and *BQ Terrace*, compressed using four different lossy video codecs (source: Baroncini, et al., 2017). Each clip is coded at a range of compressed bitrates. HM is the HEVC/H.265 reference video codec and JEM, PA, and PB are three experimental video codecs under test. The X-axis indicates the compressed bitrate and the Y-axis indicates the Mean Opinion Score (MOS). Each point on the graph represents the average subjective quality score of multiple observers.

For *Campfire Party*, we can see that the experimental codecs out-perform the HEVC codec at all the tested bitrates. At every bitrate (x-axis), the experimental codecs give a higher MOS (y-axis). For the second clip, *BQ Terrace*, the experimental codecs out-perform the HEVC codec at lower bitrates. At the highest bitrate (around 1700 kbits/second), there is little difference between the four codecs, probably because none of the decoded clips shows obvious distortion. From these charts, we can see that the new codecs perform better than the older HM codec, at least for the video clips and bitrates tested.

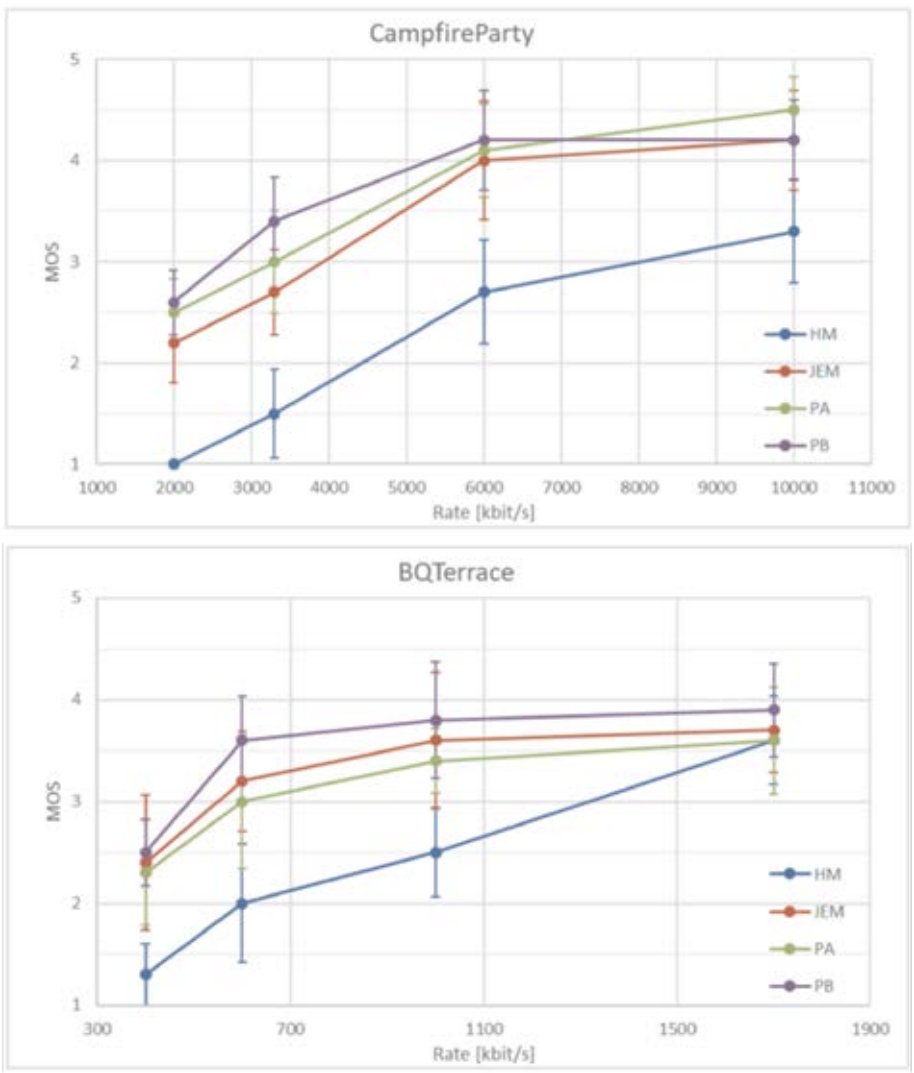


Figure 10. Subjective evaluation of two video clips, each coded using four codecs at a range of bitrates, from Baroncini, et al., 2017.

6. Conclusions

The increasing trend towards born-compressed video, i.e., video that is encoded at source using lossy compression, makes it necessary to understand lossy video compression and its associated quality issues.

Compressed video quality is a complex topic with some unresolved questions. For example, a definitive and universally agreed measure of compressed video quality is still some way off. The range of subjective and objective measurements and testing procedures can be confusing, especially when trying to compare different systems tested using different methods.

When attempting to evaluate the quality and performance of video processing systems or stages, the following practical considerations may be helpful:

1. Test (or ask for test results) using a range of video content and at a range of compressed bitrates.
2. Test using content that is representative of your own application area. For example, content with graphics or other computer-generated material may perform very differently from natural video scenes.
3. Where practical, consider testing using multiple methods, for example two or more of the following:
   a. Subjective testing with a single observer.
   b. Subjective testing with multiple observers, following a protocol such as DSCQS.
   c. Objective testing, if possible using a more sophisticated alternative to PSNR.
4. When comparing systems, where possible, compare results using the same video sources, the same range of compressed bitrates and the same quality metrics.

Despite the challenges and uncertainties associated with video quality measurement, lossy video compression is likely to be with us for some time to come.

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KA MUA, KA MURI[1]—LOOKING BACK TO LOOK FORWARD: DIGITAL PRESERVATION AND ORAL HISTORY WORKFLOWS AT THE ALEXANDER TURNBULL LIBRARY, NATIONAL LIBRARY OF NEW ZEALAND

Valerie Love, Alexander Turnbull Library, National Library of New Zealand

1. Introduction

The Alexander Turnbull Library was founded in 1918 by collector and bibliophile, Alexander Horsburgh Turnbull (1868–1918). Alexander Turnbull had amassed a collection of over 55,000 manuscripts, books, photographs, drawings, paintings, and maps, which he maintained in his purpose-built private residence. At the time, it was the largest private collection in New Zealand. Turnbull bequeathed his collections to the government to create a reference library in the city of Wellington. His vision was that the contents should not be lent out, but kept together 'as the nucleus of a New Zealand National Collection.' Turnbull's house was purchased by the government, and in 1920, the Alexander Turnbull Library was opened to the public as a national reference and research library.[2] In 1965, the Alexander Turnbull Library officially became part of the National Library of New Zealand, though it continued to be located at Turnbull House (and various other sites around Wellington) before moving to a new National Library building in 1987.

In addition to the original collections owned by Alexander Turnbull himself, the Turnbull Library now holds the archives and special collections for the National Library of New Zealand, and actively collects materials representing New Zealand's unpublished documentary heritage and Māori worldview, as well as materials relating to the South Pacific Islands and Antarctica. Currently, the Turnbull Library holds millions of items, both analogue and born-digital. The Turnbull Library also collects websites and conducts harvests to capture all web content in the .nz domain.

2. Origins of a Digital Preservation Programme at The National Library of New Zealand

While digital materials have existed in the Turnbull Library's collections since the 1980s, it was in 2003, in conjunction with the passage of the National Library Act of New Zealand in Parliament, that the National Library began to formalise digital collecting and digital preservation policies. The National Library Act outlined the mandate of the National Library, and of the Alexander Turnbull Library within it, stating that the Library is responsible for ensuring that the documents and collections in its care are managed, preserved in perpetuity, and made accessible in a way that reflects their status as documentary heritage and taonga[3] of Aotearoa New Zealand. The Act also specified that a document can be in any form, including: "… information recorded or stored by means of any recording device, computer, or other electronic device … and material subsequently derived from information so recorded or stored."[4] This new legislation required the Library to develop a robust born-digital collecting and preservation programme to ensure that New Zealand's contemporary cultural herit-

1 'Ka mua, ka muri' is a Māori proverb which represents the idea of walking into the future (which we cannot yet see), while looking back at what has come before.
2 J. E. Traue. Dictionary of New Zealand Biography, vol 2, 1993. Accessible at: https://teara.govt.nz/en/biographies/2t53/turnbull-alexander-horsburgh [Accessed 8 January 2018].
3 The word "Taonga" is the Māori concept of something to be treasured.
4 National Library of New Zealand (Te Puna Mātauranga o Aotearoa) Act 2003. Accessible at: http://www.legislation.govt.nz/act/public/2003/0019/latest/whole.html#DLM191962 [Accessed 8 January 2018].

age—including Māori taonga and indigenous cultural knowledge—would be cared for and preserved for the future.

In 2004, the National Library began a project to develop a digital preservation and object management system. In addition to providing long term storage and access to born-digital collections, it also had to support all of the digitisation work streams in Turnbull Library, including sound conservation and imaging services. It also needed to support the digital holdings of the National Library's published collections, including ebooks, journals, and music received via legal deposit.

The Library successfully applied for additional government funding for a project to establish a National Digital Heritage Archive (NDHA) programme. As part of the project, the Library formed a development partnership with the software company Ex Libris to build a full digital archive and preservation management system. As Jay Gattuso writes:

> During the transition from a fledgling project, to a fully featured digital preservation programme, the NDHA team needed to explore what it meant to "do" digital preservation as a day-to-day activity inside a national library. The products of this exploration can be found in much of the core functionality found inside Rosetta. Much of this exploratory thinking was deeply speculative while also leveraging heavily on prior work, with direction, suggestions, and hints coming from works that preceded the project. As the project team started to focus on the requirements of a preservation "system", there was very little established knowledge to draw from. This led the project team to speculate on what the future would look like, addressing such thorny issues as "what will we know about formats, and their associated risks?", "how will we know that we have content with an associated technical risk?", "how will we undertake risk mitigation activities on file-like objects?", "how will we process items and workflow tasks", "who is the intended audience of this work?" and so on.[5]

The resulting Rosetta[6] digital asset management and preservation system was launched in October 2008, based on the Open Archival Information System (OAIS) reference model and Metadata Encoding and Transmission Standard (METS)[7]. Rosetta offered functionality for ingest, preservation action, recording descriptive and administrative metadata, arrangement and structure maps for digital files, and the creation of access copies/derivatives.

The actual digital objects being preserved, known as Intellectual Entities (IEs), might be a single item such as a digital photograph. Or, they could be complex items comprising multiple files, such as separate tracks that together form the sound recording for an oral history interview, or scans of individual pages from a soldier's diary written during World War I.

5 Gattuso, Jay. Preservation Actions: where we started and where to do we go from here. Alexandria: The Journal of National and International Library and Information Issues. SAGE Journals. 6 September 2017. Accessible at: http://journals.sagepub.com/doi/pdf/10.1177/0955749017725437 [Accessed 8 January 2018].

6 Currently the Rosetta application is used by libraries and archival institutions around the world. See http://www.exlibrisgroup.com/category/RosettaOverview.

7 Library of Congress. METS: An Overview and Tutorial. See https://www.loc.gov/standards/mets/METSOverview.v2.html.

3. The National Digital Heritage Archive (NDHA) today

In the nearly ten years since adopting Rosetta, the National Library has developed a robust set of processes, protocols, and documentation for working with born-digital collections. Many of these guides are available on the Library's Digital Preservation Programme website at https://digitalpreservation.natlib.govt.nz.

Since 2010, there has been a marked increase in the number of individual files within an IE, reflecting the growing complexity of these digital objects, both digitised and born-digital.[8] As of 31 July 2017, the National Library's digital collections comprise 1.6 million intellectual entities; 14.4 million master files; and 30,321 web harvest entities containing over 231 million individual files.

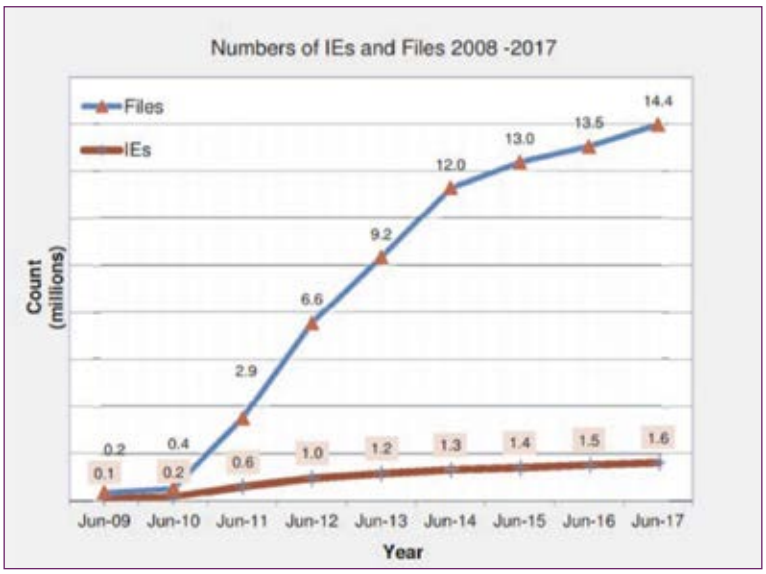

Figure 1. Number of IEs and Files, 2008–2017.

The digital collections in the NDHA constitute 204 Terabytes in total, a figure which has also been increasing at a growing rate over the years. 190 different file formats are represented in the collection, though the vast majority are standard formats such as tiff (7 million); xml (4 million); jp2 (2 million); .txt (319K); .pdf (238K); and .doc files (201K). Video and sound files are a much smaller subset of current holdings, with 29,000 .flac files; 26,000 .wav files; 17,000 .mp3 files; and video file formats comprising fewer than 1,000 intellectual entities.

8 Securing the future: Digital Preservation at the National Library of New Zealand, https://digitalpreservation.natlib.govt.nz/assets/NDHA/Home/NDHA-Booklet-end-Jul17.pdf [Accessed 8 January 2018].

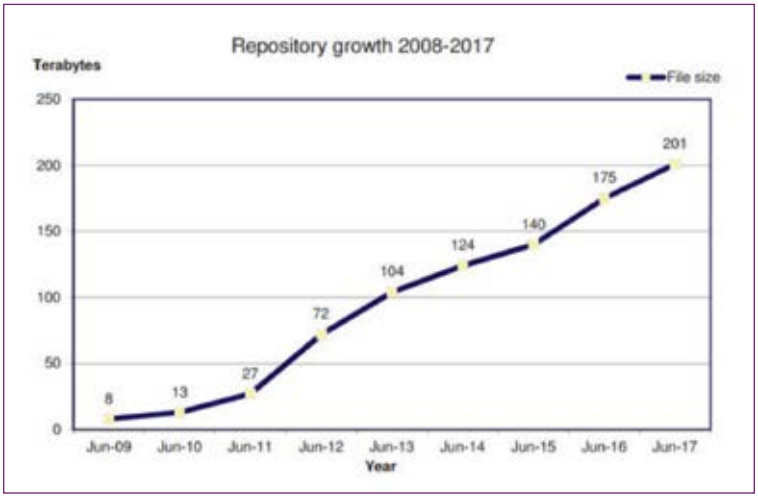

Figure 2. Repository growth 2008–2017.

In 2016, Turnbull Library launched a new collection management system for unpublished and archival materials, and the National Library developed a new set of strategic directions. The new strategic directions focused on three broad areas—reading, knowledge, and taonga. The taonga strategic direction included a vision that "Born-digital content reflecting contemporary New Zealand life and knowledge will be readily available for access and research." Like most collecting institutions, Turnbull Library has a backlog of unprocessed collections, including born-digital. As such, the Library began to re-evaluate its born-digital workflows in order to try to remove barriers to access in light of the new Library priorities.

4. Oral History Collections at the Turnbull Library

The Turnbull Library is the official repository for oral history projects that receive funding from Manatū Taonga, the Ministry for Culture and Heritage. Since 1990, Manatū Taonga has provided funding to nearly 400 community groups, individuals, and historians to gather and preserve life stories through oral history.[9] The Turnbull Library also commissions its own oral history projects to document contemporary events and politics. Over the past 10–15 years, oral history collections at Turnbull Library have transitioned from entirely analogue to almost entirely born-digital. However, many of the processing workflows have stayed relatively the same.

Turnbull Library currently holds close to 1,500 oral history collections on a range of topics—everything from interviews with Māori elders, to the history of ice cream making in New Zealand, to stories of sex workers, and more. The oral history collections comprise over 7,000 individual interviews, and approximately 16,000 audio recordings. Turnbull Library also generates oral history diary projects, which follow an interviewee over a set period of months or years. These collections hold the voices and experiences of New Zealand life that history might not otherwise remember.

9 See http://www.mch.govt.nz/funding-nz-culture/ministry-grants-awards/new-zealand-oral-history-awards [Accessed 8 January 2018].

Because the bulk of Turnbull Library's oral history collections are acquired from individuals and organisations, the more guidance and advice that the Library can provide to content creators before the files even come into the Library, the better digital content and metadata the Library receives. Our philosophy is that digital curation begins at the time of file creation. The Library actively engages with the National Oral History Association of New Zealand (NOHANZ), to run oral history training workshops on a regular basis, and to provide recording equipment for hire. The Library also provides oral history advice, including resources on file format recommendations and naming conventions, which are available on the Library's website.[10]

5. Born-Digital Workflows at the Alexander Turnbull Library

5.1 Acquisition

Digital files come to the Library in a myriad of ways—via physical media carrier, such as a portable hard drive, USB drive, optical disc, compact flash card, or via email or electronic transfer. A typical oral history collection may include a variety of files and formats, such as sound files in WAV and/or MP3 format; interview abstracts and a project report as Microsoft Word documents; PDF scans of agreement forms; and JPEG scans of photographs or other documents from the interviewee's early life. The Library asks donors to fill out a media deposit form at the time that the files are supplied to the Library, so staff can verify that all files they intended to provide have actually been received.

However, when the Library first receives physical media carriers, even with donor-supplied file lists to accompany them, it is impossible to know either the quality or the composition of the digital content. Receiving blank discs, or corrupted or poor quality files that are not suitable for long term preservation, as well as materials that are unrelated to a particular collection, is relatively common. So for these reasons, physical carriers of digital content are not accessioned immediately. Instead a proposed acquisition record is created for the materials, which records the type of physical carriers or other method of transfer to the Library, and documents the initial assessment of the collection.

Figure 3. Some of the materials received from the Sisters for Life oral history project, which interviewed women who graduated from the Christchurch School of Nursing in the early 1970s.

10 See https://natlib.govt.nz/researchers/oral-history-advice [Accessed 8 January 2018].

5.2 Technical appraisal

Next, the physical carriers and/or any files received electronically undergo technical appraisal. Technical appraisal allows the Library to assess the quantity and quality of digital files, and determine the processing and preservation needs of the material. This includes a virus check, the generation of a checksum for each file, and transfer of the files from the original media to the secure pre-deposit server for further analysis.

The Library then uses DROID[11], a file profiling tool developed by The National Archives of the United Kingdom, to identify file formats in a collection, and generates a file list to record the metadata for each file. For unusual or obsolete formats, staff determine if the files can be opened, or if they require proprietary software or the creation of an access copy in a standardised format. Even if the file format itself is relatively standard, there may be other technical issues such as illegal characters in the file names, which can require pre-conditioning before loading to the system.

Once the initial technical appraisal has been completed, collections that contain born-digital audiovisual content receive further analysis to assess the quality of the media files, noting any issues with levels, feedback, or background noise that could impact the ability for researchers to listen to the recordings. This information is documented in the ingest report, which is then supplied to the Curator and the arrangement and description staff who will be processing the collection. Files that do require pre-conditioning or preservation action prior to loading to Rosetta go into the work queue of the Digital Archivists or NDHA's preservation analyst respectively. For low quality, or non-standard files, the Library may request replacement files from the donor, where possible.

5.3 Content appraisal

Once the technical appraisal has been completed for both the audiovisual and non-audiovisual materials, the collection receives content appraisal, which determines exactly which materials are to be formally accessioned into the Library's collections. Content appraisal determines if there are any materials that should not be maintained as part of the collection, such as outtake or testing sound files; digital abstracts with the same intellectual content provided in different formats (e.g., MS Word and Adobe PDF), and any other supplied contextual information which may be used in creating the finding aid and descriptive records. Content appraisal is particularly important for maintaining the sustainability of digital archival collections over time. Recent additions to the oral history and sound collections at Turnbull Library comprise nearly four terabytes of data, and with ever-increasing amounts of content being created, it is necessary to make thoughtful and inclusive choices about what is collected and preserved.[12]

Beyond whether or not to actually retain materials for the collections, another key aspect of content appraisal is to determine the access rights for individual files that are accessioned into the collections. Currently three levels of access are available for unpublished digital

11 DROID stands for Digital Record Object Identification. Information on DROID is available at http://www.nationalarchives.gov.uk/information-management/manage-information/policy-process/digital-continuity/file-profiling-tool-droid/ [Accessed 8 January 2018].

12 There is extensive literature available on archival appraisal issues, and appraisal in a digital context. See *No Innocent Deposits: Forming Archives by Rethinking Appraisal* (2004) by Richard J Cox, and *'We Are What We Keep; We Keep What We Are': Archival Appraisal Past, Present and Future'*, by Terry Cook (2011), as examples.

objects—100 level open access (available online to anyone anywhere in the world); 300 level (only available onsite at the National Library within the Alexander Turnbull Library Reading Room), and 400 level (only available in the Alexander Turnbull Library Reading Room once permission for access has been granted by the donor or collection trustee).

The appraisal decisions are tracked using the file list, where any files not to be retained are noted. The file list also is used to designate the access rights for each file that is to be retained. Once the appraisal decisions have been finalised, the collection is formally accessioned, and the files are loaded from the pre-deposit server to the processing workbenches of the digital preservation system.

5.4 Loading of digital files

The National Library uses an in-house tool called INDIGO to load digital files to Rosetta. Interviews usually contain multiple sound recording files for single interview session, and these files are loaded together as a multi-file intellectual entity. This allows users to still see the original file names and listen to various parts of the interview, but maintains the context of the sound recordings individually as part of a greater unit. Where appropriate, the multi-file intellectual entities can be loaded with user-defined METS structure maps to define the hierarchy of the digital object, and create metadata labels for the sound recording file. Library staff can therefore apply headings to intellectually differentiate different files within a multi-file IE, such as technical checks or warmup questions from the main content of the interview. This allows greater transparency in content for researchers, who may or may not be interested in listening to sound check files.

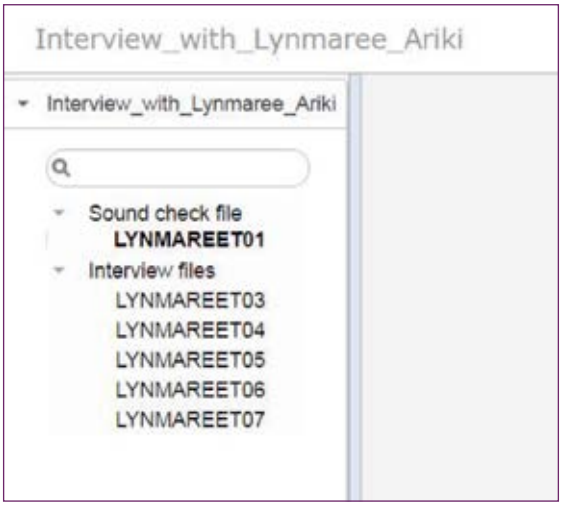

Figure 4. Example structure map for an oral history interview. The digital sound recording itself is a single intellectual entity formed by 6 WAV files.

5.5 Arrangement and description

All intellectual entities in the NDHA must be linked to a descriptive record, either from the National Library's main catalogue for published materials (books, serials, music, maps, etc), or from Tiaki, the Turnbull Library's catalogue for unpublished and archival collections.[13] The linking of born-digital objects to their corresponding descriptive record is carried out within the Rosetta processing workbenches. Within the Rosetta secure digital workbenches, the files can be safely accessed by staff without the risk of accidentally changing the file's content or metadata, and attached to the correct descriptive record. Maintaining the integrity of the digital content over time is core to the work of the NDHA.

The format of the descriptive records and finding aids for born-digital content depends on the collection itself being processed. For some digital objects, it makes sense to have a one-to-one object to record relationship, where each individual digital item has its own descriptive record. For other collections, multiple digital files may be linked to the same descriptive record, particularly if the context of the digital content is contingent on other materials, such as an oral history interview digital sound recording and corresponding abstract document. There is currently no limit to the number of digital objects that can be attached to an unpublished descriptive record, though until recently, the digital files attached to a single record had to all have the same access rights (e.g., all open access, or all requiring permission).

5.6 Discoverability and access by researchers

When the finding aid for the oral history collection and descriptive records for individual interviews are complete, the finding aid is published on Tiaki, and also discoverable via the National Library's federated search across published and unpublished collections.[14] Records with digital content display a link which opens the NDHA viewer, though for oral history collections, users must be onsite in the Turnbull Library's reading rooms to listen to the interviews. This policy regarding born-digital oral history materials is in place to protect the privacy of any individuals who may be mentioned in contemporary interviews. However, the Library does have open access audio collections that can be listened to online from anywhere in the world, such as the Te Upoko o Te Ika Māori radio collection.[15]

Ensuring the appropriate level of detail in finding aids for content can be challenging, whether born-digital or analogue. Oral histories frequently contain personal details about people in the interviewee's life, some of whom may have no idea that the interview materials even exist, or may not wish to have their experiences shared publicly. There can be unexpected connections in oral history collections, particularly in a relatively small country like New Zealand, which has a total population of less than five million. The Library ascribes to a policy for responsible discoverability in its finding aids and descriptive records—that is, providing enough information to allow a researcher to determine if an interview is relevant to their areas of interest, without compromising privacy of the interviewee and any other people mentioned in the interview.

13 See https://tiaki.natlib.govt.nz/ [Accessed 8 January 2018]. The Tiaki catalogue for unpublished collections uses EMu collection management software by Axiell.
14 See https://natlib.govt.nz/ [Accessed 8 January 2018].
15 See https://natlib.govt.nz/collections/a-z/te-upoko-o-te-ika-maori-radio-collection [Accessed 8 January 2018].

6. Workflow Management

The workflow for born-digital materials involves teams from across the Library, which can offer challenges in terms of oversight and workflow management. Staff are often balancing work on a variety of collections at the same time, and if a collection is not straight-forward, or contains files which require pre-conditioning or technical work prior for preservation and access, the collection may be delayed in getting to that end point of being available to researchers.

The Library aims to be transparent regarding any unprocessed arrears, and in these cases will publish a scant collection level record containing a note that the collection is currently being processed by Library staff, and to contact the library for more information. However, holding substantial numbers of unprocessed collections is not ideal for building good donor relations, or for serving the researchers or family members who are keen to access these materials. Unprocessed backlogs can also create added stress for staff who then have to explain to stakeholders why these collections are still in progress. There is always more work to do to reach the strategic goal of born-digital collections being "readily available for access and research."[16]

7. Conclusion and Parting Thoughts

Solid communication and documentation are key to managing born-digital audiovisual materials. Taking time to plan and evaluate is important, as it provides a baseline for decision-making, but it can be easy to fall into the trap of constantly assessing and planning, rather than actually doing the work. The longer collections await processing, the greater the risk of loss of content (or loss of context!). There may never actually be the "right time" or the ideal circumstances. So do what you can, when you can. It is essential to follow proper digital preservation protocols, but also important to identify the challenging aspects of the workflow and make space for reflection, and a bit of creativity.

If you do not know where to begin, look to the standards, and talk to colleagues at other institutions. Make the best decisions you can using the information and resources that you have available to you at the time. And be sure to document those decisions and why you made them. That makes it much easier to re-evaluate later if you need to.

With digital preservation, there is no finish line. The Turnbull Library is always working to improve processes and workflows in order to best care for the collections, and to provide quality service to researchers. It is always a work in progress. Having a strategy for managing born-digital collections, with robust workflows and the right tools in place can make that work a whole lot easier.

16 See https://natlib.govt.nz/about-us/strategy-and-policy/strategic-directions/taonga [Accessed 8 January 2018].

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THE IMPORTANCE OF MEMORIES IN THE TRANSMEDIA ERA

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1. The Transmedia Phenomenon

In 2003, Henry Jenkins coined the concept of transmedia. The early ideas on the topic came from discussions about the future of the entertainment industry, in particular, the games industry. Jenkins noted that the phenomenon was not new, but particularly in the 2000's the games narratives were expanding beyond games to other media. This trend was lucrative for the game industry—expanding an audience with new markets—and for audiences increasingly interested in complementary narratives of stories, such as detailed parallel plots or character's background stories:

> Younger consumers have become information hunters and gatherers, taking pleasure in tracking down characters' backgrounds and plot points and making connections between different texts within the same franchise. And in addition, all evidence suggests that computers don't cancel out other media; instead, computer owners consume on average significantly more television, movies, CDs, and related media than the general population (Jenkins, 2003 p.1).

The *prosumers* (producers + consumers) contribute to the expansion of the narrative world when they comment, share, analyze, and end up creating layers of information. In the transmedia era, a product can be converted from original versions to new versions. Books can be turned into movies, or cartoons can generate comics or TV series, for example. Worth mentioning are franchises such as Indiana Jones, Star Wars—that became games, books, toys—and the TV series Dawson's Creek and a lot of Marvel Comics that also had their narratives expanded. According to Scolari (2013), another important concept related to transmedia is *storytelling*, or, the way the story is told in different languages (verbal, iconic) and different media (cinema, comics, television, toys, games). In fact, the transmedia phenomenon depends on the potential of each media to build different narratives that incorporate audience and complementary information:

> In the ideal form of transmedia storytelling, each medium does what it does best—so that a story might be introduced in a film, expanded through television, novels, and comics, and its world might be explored and experienced through game play. Each franchise entry needs to be self-contained enough to enable autonomous consumption. That is, you don't need to have seen the film to enjoy the game and vice-versa (Jenkins, 2003 p.2).

Transmedia storytelling attracts different audiences and creates different forms of loyalty. The idea is to offer audiences, eager for information, complex, sophisticated, complementary, and shareable content.

2. Social Media Storytelling and "I" Digital

Transmedia narratives can be also applied to social media such as Facebook, Instagram, Pinterest, YouTube, WhatsApp, Snapchat, and Twitter. Each social media have their own features and challenges—characteristics, layout, usability, resources—that can provide users different ways to tell corporate and individual stories through text, audio, illustrations, or videos. To people and corporations, an online presence also means a *museum of yourself* (Shikida & Moura, 2007, p.269). By 2017, video content will represent 74% of all internet traffic and more than 300 hours of video are being uploaded to YouTube every minute. More than 250 billion photos have been uploaded to Facebook and over 95 million photos and videos are shared on Instagram every day. Tweets with images receive 150% more retweets than tweets without images.[1]

All this process is not purely the result of social media usage, but is defined by a group of factors and keywords widely discussed by Negroponte (1996), Jenkins (2015):

1. Digital — material convergence from atoms to bits;
2. Interaction — instantly share, comment, and react;
3. Mobile devices — portable and multimedia devices in your own pockets;
4. Co-creation — possibilities to complement narratives with other users;
5. Do it yourself — being an expert is not necessary to create content;
6. Big data and personal data — used to guide your online preferences;
7. Media channels — different media to tell stories;
8. Narrowing and niches — content created for a specific group or interest;
9. Digital presence — to be important, people and institutions have to be on the Internet.

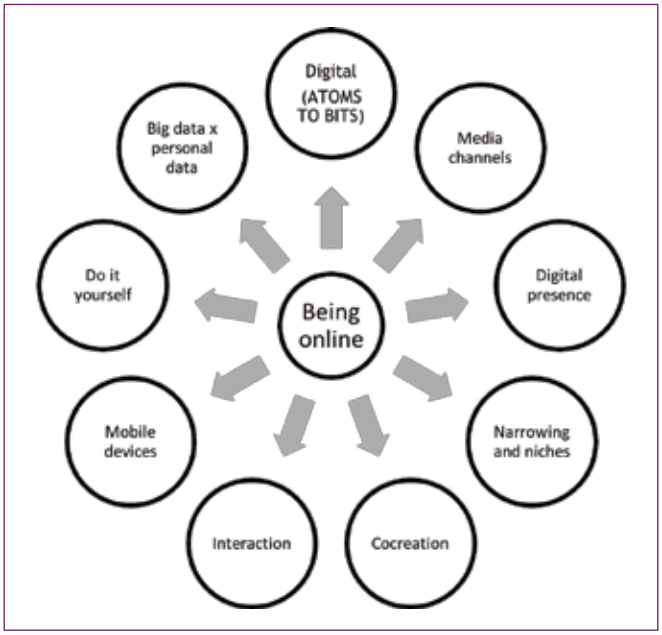

Figure 1. Key factors related to being online in the Transmedia era.

1 Data available at www.hubspot.com/marketing-statistics and www.socialpilot.co/blog/151-amazing-social-media-statistics-know-2017/.

The online phenomenon is recent and follows the expanding and popularization of Internet services. At first, users' participation and interactions were required the creation of an HTML personal site—often difficult to create for non-experts. At the beginning of 2000, these personal pages were replaced by blogs—supported largely by blog platforms, making it easier to use and create this content—where everybody who had internet access could share their experiences about themselves or some specific subject. Soon, the blogs became more complex and multimedia through photologs and videologs and the boom of instant messaging started, reflecting the idea of Web 2.0, which prioritizes person-to-person interaction. Today, social media are a mix of all the other stages of digital presence evolution where transmedia storytelling—creating a particular narrative—also defines the *"I"* presence and *"I"* memories:

The evolution of social networks in this direction was predictable, since the tendency of Web 2.0 is to transform each person into an author, creating his own broadcast, becoming the center of a communication tool increasingly focused on the individual and his individualities (Shikida & Moura, 2007, p.269).

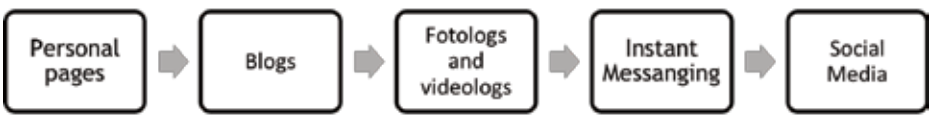

Figure 2. The evolution of digital presence.

Social media became a way to express individuality, providing to users the perfect environment for publishing texts, photos, videos, and information; and, therefore, became an important place to share memories. Previously, pictures and videos in albums and on video tapes were collective, collections of individuals joined with family and closer friends. Today, new memories are created using smartphones, delivered to the world on social media—commented on, reacted to, shared—and stored in personal accounts on social media platforms or digitally in a person's private storage.

The "*I*" presence and "*I*" memories are insured by a set of features that constitute social media. Social media platforms are often defined by *timelines* (chronology and linear layout), *cataloging (*content organized by hashtags, albums, categories), and *editing* (revise, hide, or delete information). Social media also provides *tools* (emojis, temperature, reactions and location), *additional information* (intersections with other apps and websites), and *engagement (share and comment)*, all of which make online relationships similar to real-life interactions. Finally, *multimedia* and *convergence*, the former refers to the availability of different formats in the same place, and the latter guarantees that all different and complementary narratives can be experienced in the same place.

What people share in social media settings—text, picture, video, or other information—and the way they choose to share a story converge to define their *I presence*. The decision to remember and "archive" a story is an individual choice—*I choice*—mediated, shared, and stored through social media.

3. "I" Presence and Construction Of Selfie Memories

One of the best examples of *I presence* is the *selfie*. The word comes from *self-portrait*, originally a drawing, sculpture, photograph, or painted portrait made by oneself about oneself. In this paper, the term *selfie memory* will be used to define information that people and institutions—users of social media— choose to share, react to, or comment about on social media. Oxford Dictionaries chose the word selfie as a World of the year 2013, based on the growth of pictures taken by users about themselves:

Early evidence for the term show a variant spelling with a –y ending, but the –ie form is vastly more common today and has become the accepted spelling of the word. It could be argued that the use of the-ie suffix helps to turn an essentially narcissistic enterprise into something rather more endearing. It also provides a tie-in with the word's seemingly Australian origins, as Australian English has something of a penchant for -ie words – barbie for barbecue, firie for firefighter, tinnie for a can of beer, to name just three (Oxford dictionaries, 2013).[2]

Selfie memories are layers of information recorded on social media, the *I presence* built by a social media user as a creator of content and expressive actions in a digital setting. In the micro perspective of selfie memory, users have the power and autonomy to frame the steps of their own storytelling. First, the user chooses how to tell a story (by pictures, text or video), and then the ideal social media for telling the story, and then the user can interfere with the content using resources such as filters, in-platform editing, or icons.
The last step is for the user to decide between the three common types of publishing: live, temporary, or traditional. The *live* option is a real-time broadcast, very common on YouTube, Facebook and Instagram. More immediate, this type of publishing has its roots in the news, where the event broadcasted is assumed to be important and relevant with a social impact, e.g., journalistic coverage.

In the *temporary* publishing option, the content will be available for a short period of time. This option falls between immediate and long-term storage. It is widely used on Snapchat, Instagram, and Messenger (Facebook) according to the rules of their platforms. In most cases, stories are made available for 24 hours.

The third option, *traditional storage,* is a long-term publishing option available in some social media. This type of storage is not immediate or temporary, the content is stored and becomes a constant part of a user's storytelling online presence, defining their *I presence*, creating layers of information recorded in timelines, folders, and albums inside the social media platform or website.

2 Available on Oxford Dictionaries https://en.oxforddictionaries.com/word-of-the-year/word-of-the-year-2013

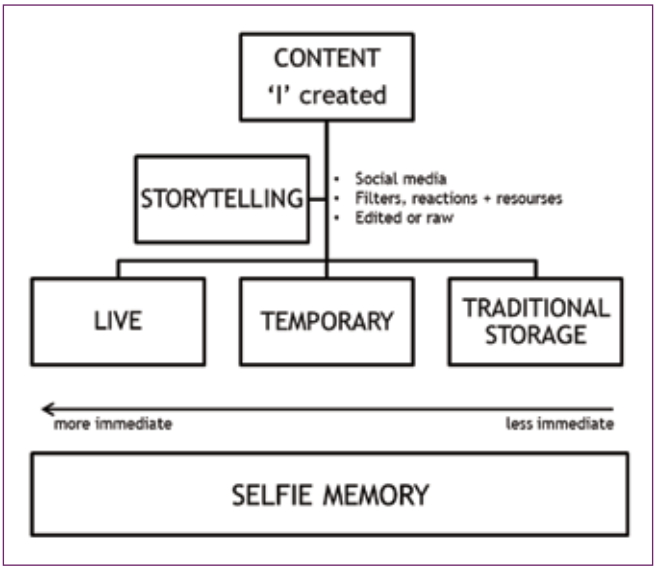

Figure 3. A content model, defining Selfie Memory as digital media object.

The macro perspective of selfie memory is framed by the triad of content creator (I), other creators (Others), and the particular social media platform (Social Media), in the context of two possible protocols: *authorization and sovereignty,* and *authorization and interaction*.
The first protocol—*authorization and sovereignty*—involves the relation between "I and Social Media" and "Others and Social Media." It is based on the platform-defined boundaries of sovereignty (algorithms used to connect users and the possibility of filter bubbles) and authorization (the terms of use and the experience—characteristics, layout, usability—chosen by the user). The second protocol involves the "I and Others" relationship based on authorization (allowing other users to be part of one's network, and privacy layers, including direct messages, public messages, and the ability to hide and edit information) and interaction (targeting, sharing, reacting, and engaging).

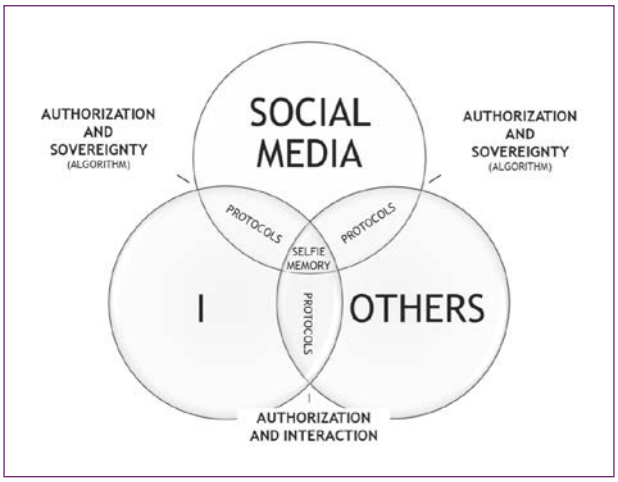

Figure 4. A macro perspective of Selfie Memory content.

The macro perspective of selfie memories also suggests that the protocol of *authorization and sovereignty* guides the user of social media to *non-selected memories* based on the platform algorithm and the user's selected platform preferences. This idea can be illustrated, for example, when Facebook reminds the users what they wrote in the same date three years ago or requests to share how long the relationship between a user and a selected friend has existed on the platform. On the other hand, the protocol of *authorization and interaction* guides the user of social media to *selected memories* created by them and their network.

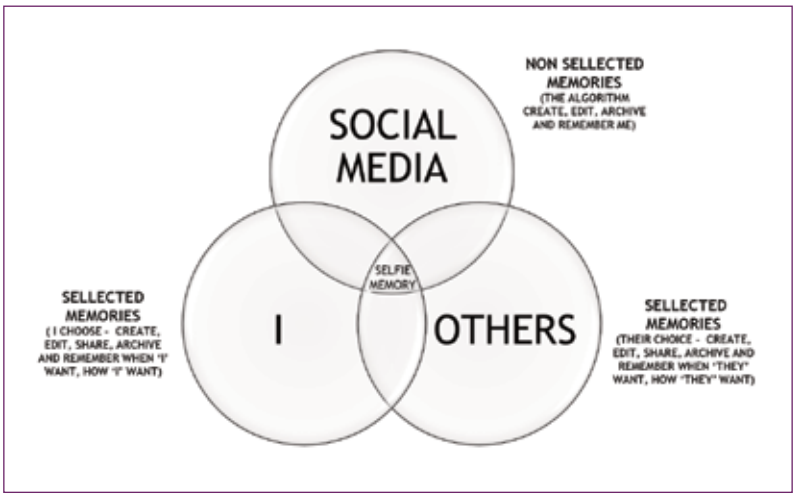

Figure 5. A macro perspective of Selfie Memory content, demonstrating selected vs. non-selected memories.

4. Final Remarks

Aside from presenting contemporary concepts, such as Transmedia and Storytelling, and their applications on social media, this paper aims to start a necessary discussion about personal and institutional memories—especially those that are embodied predominately as digital media content—from different perspectives. The first and more expressive goal is to illustrate the creators' perspective with their storytelling choices, including which social media was used and what content was published—text, image, audio, or video. The second focus is the makeup of a user's network and how users can interact—comment, share, react—with the content. The final perspective, the social media platforms themselves as institutions and companies, with their business interests and their platforms' algorithms and featured characteristics. The dynamic relationship between this triad provides us some idea of how, as archivists, to deal with memories created in social media, i.e., selfie memories.

Selfie memories also affect the experience of revisiting memories. Traditional methods for accessing memories (for example, documents, photos, videos in different media) that are experienced physically are now integrated with digital methods, more volatile but more accessible, as well. Today, self-published content online is a type of memory that is shared, commented on, and reacted to everyday by users, their networks, and the world. Today's fluid, convergent, and immediate digital atmosphere requires us to understand the *I presence* and selfie memories in the context of technological and human-created variables.

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IASA Journal

- Journal of the International Association of Sound and Audiovisual Archives (IASA)
- Journal de l'Association Internationale d'Archives Sonores et Audiovisuelles (IASA)
- Zeitschrift der Internationalen Vereinigung der Schall- und audiovisuellen Archive (IASA)
- El Journal de Asociación Internacional de Archivos Sonoros y Audiovisuales (IASA)

The IASA Journal is published twice a year and sent to all the members of IASA. Applications for membership of IASA should be sent to the Secretary General (see list of officers below). The annual dues are €55 for individual members and €220 for institutional members. Back copies of the IASA Journal from 1971 are available on the IASA website. Subscription to the current year's issues of the IASA Journal is also available to non-members at a cost of €70.

Le IASA Journal est publié deux fois par an et distribué à tous les membres de l'association. Veuillez envoyer vos demandes d'adhésion au secrétaire don't vous trouverez l'adresse ci-dessous. Les cotisations annuelles se montent actuellement à €55 pour les membres individuels et €220 pour les members institutionnels. Les anciens numéros (à partir de 1971) du IASA Journal sont disponibles sur demande. Ceux qui ne sont pas membres de l'Association peuvent s'abonner au IASA Journal pour l'année en cours au coût de €70.

Das IASA Journal erscheint zweimal jährlich und geht allen Mitgliedern der IASA zu. Aufnahmeanträge für die Mitgliedschaft bei der IASA sind an das Sekretariat (Anschrift siehe unten) zu richten. Die Mitgliedsbeiträge betragen derzeit €55 für individuelle Mitglieder und €220 für Institutionen. Frühere IASA Journale (ab 1971) sind auf Anfrage erhältlich. Der Bezugspreis des IASA Journals für Nichtmitglieder beträgt €70.

El 'IASA Journal' se publica dos veces al año y se envía a todos los miembros de la IASA. Las solicitudes de inscripción a la IASA deben dirigirse al Secretario General (consultar la lista de los miembros directivos a continuación). Las cuotas anuales son de €55 para los miembros individuales y de €220 para los institucionales. Los números atrasados del 'IASA Journal' desde 1971 están disponibles previa solicitud. Las subscripciones a los números del 'IASA Journal' del año en curso también están disponibles para no asociados, al precio de €70.

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IASA uses Gill Sans as its preferred font. Gill Sans was created by Eric Gill and published by the Monotype Corporation between 1928 and 1930. Gill Sans is widely admired for its quiet gracefulness and versatility. In the Bit stream font collection, Gill Sans is called Bit stream Humanist 521. Gill Sans was part of a competitive period in the 1920s when various foundries were developing modern sans-serif type faces for various lead type setting technology.

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