

International Association of Sound
and Audiovisual Archives

Internationale Vereinigung der
Schall- und audiovisuellen Archive

Association Internationale d'Archives
Sonores et Audiovisuelles

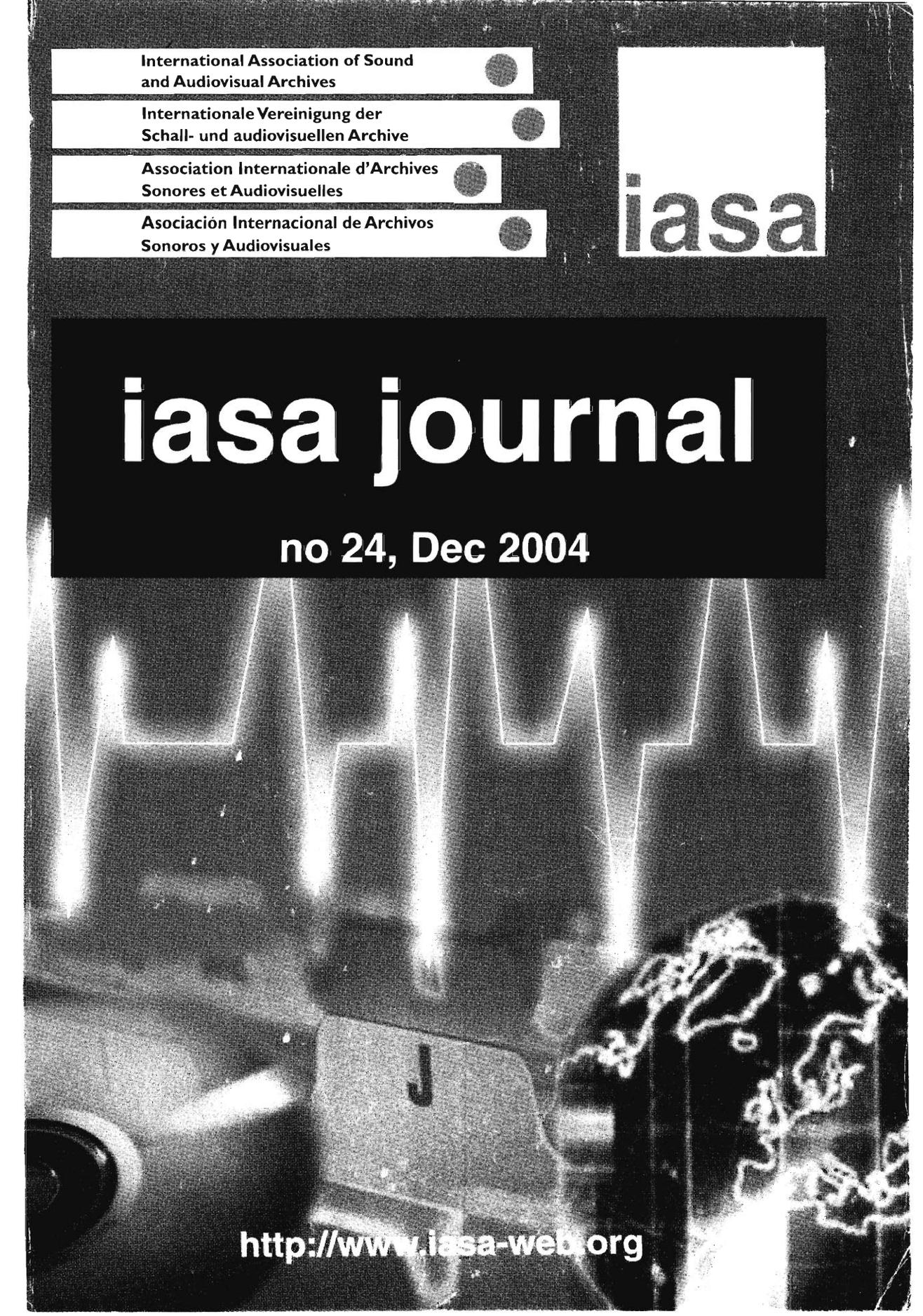
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Analogue versus digital; analogue and digital; analogue to digital and digital to digital. It struck me when I read the articles for this edition that the question of analogue versus digital is no longer debatable even though the analogue-digital domain currently provides us with more questions than answers and more theories than practice. IASA has tried to brace itself for the past 15 years against the 'onslaught' of digitisation. Yet many audiovisual archives are still battling to find answers concerning selection, digitisation plans, appropriate technology and overcoming the cost barriers. But there are archives that have found solutions and could assist in paving the way forward to successful digitised archives.

This edition of the IASA Journal provides interesting insights into the digitisation of our collections, critical questions about the best way forward, perspectives on the position of IASA and the way IASA conducts itself currently. You might agree, you might not! We would like you to add your voice to this debate to ensure IASA's healthy growth.

One of the highlights this year was the publishing of the Technical Committee's *Guidelines on the Production and Preservation of Digital Audio Objects, TC-04*, a very useful guide that will certainly assist archivists and sound technicians across the world. Pekka Gronow reviewed it for us. This publication does the Technical Committee proud and we would like to congratulate them on a job superbly done.

The past IASA-IAML congress in Oslo looked at various issues around the digitisation of multi-media formats and we share some of these views with you in this edition.

Chris Clark, as always very thought provoking, writes about the way our catalogues are changing and challenges us to become more flexible with regard to our catalogues. Chris also 'believes it is time for some definitive, published statements from our association about how best to address the many issues contained in the above set of assumptions about the way documentation works in our organisations'. Pekka Gronow talks about the digitisation of their Radio Archives at the Finnish Broadcasting Company in Helsinki and the challenges they faced. Both George Nannes-Brock and Prof. Carlo Marinelli raise concerns about knowledge and experience related to the recording and reproduction technology of the 20th century. Kevin Bradley offers useful ideas with regard to equipment preservation and support. Rainer Lotz has, as usual, interesting and stimulating thoughts on the impact of early-recorded African music. Who might have thought that the preservation of endangered languages is something for IASA? But Grace Koch and Patrick McConvell make for compelling arguments on why IASA should become involved. And lastly, who would have thought that the differences between a shrimp and a prawn could turn into a debate and find itself a place in our journal? Jacqueline von Arb

did the honours and shares her research findings that took her from harbour to fishermen to the Internet.

Do not forget that the new IASA Executive Board needs to be elected in 2005. You will soon receive more information about the nominations and the election of the new Board members. We wish you an exciting 2005 and hope to see you in Barcelona for the IASA Conference 2005.

I am writing this letter from Paris, where the annual conference of our sister organisation FIAT/IFTA (International Federation of Television Archives) is taking place. The local organizer, INA (Institut National de l'Audiovisuel), has made a special effort to bring the maximum number of participants to Paris, and the success is obvious.

I would like to highlight some items from the debates we had in the splendid Palais de Luxembourg. Under the title 'Vanishing Archives', delegates from developing countries and the former Eastern Bloc reported on the situation of their audiovisual holdings. What transpired was that, besides the very serious technical problems, they are faced with a political one: how to raise awareness among the decision makers in politics and in the broadcasting and archiving institutions of the importance and the particular needs of audiovisual archives. In this session I presented the outcomes of the Survey of Endangered Carriers carried out by IASA on behalf of UNESCO's *Memory of the World Programme* and in co-operation with the International Council on Archives. The partnership with ICA happened to be very useful: through their address files the survey reached many non-specialised institutions, mainly in developing countries. I discovered, too, taking a closer look at the questionnaires that had been sent back, a large number of questions to IASA on how to ensure the survival of collections. Therefore, we have important follow-up work to do in the next few months.

This brings me to another activity in Paris. I had occasion to meet Joan van Albada, Secretary-General of ICA, and we discussed the outcome of IASA's recent participation in the ICA Congress in Vienna. We agreed that the co-operation was a success and discussed how to follow it up. On one hand members of ICA should be informed more widely of the possibilities and advantages of IASA membership (without, of course, abandoning the membership in ICA). On the other hand, communities such as librarians and museums that are keeping a huge amount of audiovisual material in archives should be informed in a similar way of the basic rules of audiovisual archiving.

The FIAT Congress was also an occasion to promote the 'Appeal of Paris', a manifesto in favour of audiovisual archives, which had been launched by FIAT. The aim is to collect 100 000 signatures before next year's congress in New York. This is very ambitious, but would, of course, be of great help to all those who have to persuade political authorities to pay more attention to the problem of the audiovisual heritage. You can read the text of the appeal on the FIAT web site (www.fiatifta.org), and if you agree you can sign up. The official position of the IASA Board will be discussed at the next meeting, in March in Barcelona.

You may remember that a main point of our three-year strategy is to sensitize non-specialised archives to the particular problems of audiovisual archives. On 11 and 12 October in Amsterdam a project was launched, in the framework of the EU's Culture 2000 programme, called TAPE (Training for Audiovisual Preservation in Europe). It is concerned primarily with preservation and access issues of AV materials in non-dedicated institutions, i.e. collections not specializing in audiovisual, but which happen to have AV collections. AV materials in archives and museums or academic institutions are on the whole not easily accessible – perhaps even hidden from view – and do not easily lend themselves for commercial ventures. Providing continued access to such cultural/academic heritage where economic value is no issue provides specific challenges that will be addressed', says the programme of the seminar held on October 12. I think this is a very useful approach and I hope that contact between IASA and the TAPE project, which lasts until 2007, will be numerous.

Finally, I would like to remind you of next year's Board elections. The Nominating Committee comprising Sven Allerstrand (chair), Ray Edmondson and Sam Brylawski is beginning its work, and we need many candidates.

Kurt Deggeller
December 2004

How flexible and scalable is your catalogue? Developing a large database of sound recordings at the British Library

Chris Clark, British Library Sound Archive, London, UK

Paper presented at the IAML - IASA Congress, Oslo, Norway, 2004

In a paper that contains many familiar words in unfamiliar contexts (and vice versa) apologise for including one in the title. 'Scalable' in English means something you can climb up. Usually we talk about digging down into catalogues so you may well be confused by my use of this term in the title. Here I am using it in the sense that your catalogue is capable of expansion or enlargement to include such things as preservation information, rights statements and even marketing data, as well as content descriptions.

I will be making specific reference in this presentation to the database that I manage at the British Library, the catalogue of sound recordings known as CADENSA, but my intention is to generalise the issues currently facing any catalogue manager in an audiovisual archive. Likewise, although I will be talking about specific local issues about metadata, I do believe these will sound familiar to anyone in a similar position to mine, and that means working in the context of a national library or archive: those of you in this audience who work in university libraries, research archives, or in the broadcasting sector may find there is less of a resonance: indeed you may already have some of the answers I am trying to find!

A number of assumptions are made in this initial statement about familiarity, and my presentation will be addressing each of them in turn. Firstly, you will already be managing a successful database application that is still evolving and that provides a number of outputs, including a Web interface. Secondly, your organization is responding to user demand and pushing you to increase access to content through digitization programmes. Thirdly, you may be acquiring born-digital material that is already in the form of computer files (for example, MP3 files harvested from the Web, wav files created by your curators, or commissioned by them on solid state recorders): you will be thinking about reorganization of the workflow between your subject curators, your cataloguers and your technical team. Fourthly, you have a basic understanding of the concept of interoperability. In other words, the onus is on you to demonstrate that the decisions you took many years ago about how to structure your catalogue and which standards to apply, have resulted in an information resource that cannot only be expanded, perhaps indefinitely, but is also flexible enough for you not to have to contemplate starting all over again from scratch or re-engineering many gigabytes of data to upload to a different system. And if you are thinking about interoperability then you will have encountered some new vocabulary, such as 'ontology', about which I will say more later.

There is also a fifth assumption, and it is probably the most important one for the survival of your organization. You have carried your users with you: they seek, they continue to find, and may also be able to interact with your catalogue: they depart informed and happy. This sounds an obvious thing to say but I have often thought the abstractions and technologies that underpin documentation systems are more alluring and important to us than the way users interact with them. If our organization were a restaurant, one would say we spend a lot of time on the ontology of food preparation in the kitchen at the expense of the dining experience of our customers.

Finally, you may be seeking guidance from IASA and I believe it is time for some definitive, published statements from our association about how best to address the many issues contained in the above set of assumptions about the way documentation work in our organizations is heading.

I will be examining one issue in particular – metadata, and especially the impact this new form of documentation may have on existing demarcations between the various teams in an organization and on the functions of existing catalogues. I will be making reference to a current project that is seeking to apply some of the ideas in this paper.

So we begin with that reliable old cataloguing system. In retrospect things do seem to have been a lot simpler, though I do not think it felt that way at the time. The job of the catalogue manager was to compile a centralised means of providing organized access in the form of a reliable disclosure service. In other words, the catalogue.

Some of these catalogues are now enormous. The British Library Sound Archive catalogue now numbers more than five million entries, representing over three million recordings – the rest being divided between entries for musical and literary works that are performed on those recordings, and entries for the carriers on which those recordings currently reside.

The components of these large catalogues are: a set of elements or attributes (probably MARC fields), informed by a set of values (probably AACR2 rules for description and authorised headings), stored in and delivered by a proprietary or customised application profile, most likely a relational database. The main compilers are a team of cataloguers. At some stage you decided to switch on a Web interface: the number of people viewing your data (the moment you pressed the SEND key) increased dramatically. So did their expectations. Accustomed to all manner of representation of information via a Google search, users appeared little concerned with the well-crafted uniform titles and subject headings in our catalogues: the most frequently asked question became ‘if you have a copy, what can I do with it?’

It is the answer to this question that is now driving our strategies for access, in tandem with strategies for preservation. The ease with which information can be disseminated on the Web has fostered innumerable digitization for access programmes. The old catalogue is still at the heart of the organization of your archive, but it is expected to do many other things, such as support the registration and possibly even the management of digitised preservation copies; it is expected to describe and access digitised content, either as an internal function or through the export of records into some other system. It is expected that the catalogue will be interoperable, that it will be compatible with Web harvesting technologies with opaque terms such as OAI-PMH or Z39.50 and its successors SRW and SRU (and even more recently NISO MetaSearch).

By making use of an electronic resource field you may easily scale up to accommodating a link to an audio file on a separate server and render it for a remote user, but in no sense should this be considered a robust system for the future management of digitized content on a large scale. More than likely, you now have more than one documentation system to oversee; the traditional one for recordings sitting on shelves in the stores and possibly several new ones created for specific purposes, such as educational projects.

If you are acquiring sound files from the Web (a source of collection material that will certainly grow as phonogram production on compact discs diminishes) and if your curatorial staff are making or commissioning field recordings using solid state recorders and bringing back .wav files instead of DATs then you will also be managing more than one team, or at least a different workflow governing their documentation. Issues you now need to address include: how much catalogue data can be compiled at the point of file capture or file creation; how will you create and manage persistent links between your documentation and sound files; can documentation into a single metadata instance be shared, and if so, what are the editing protocols? And how do you reach the ideal position of creating one input that will support many outputs? This last question is very important: building your old catalogue was mostly about supporting a single service, just in case someone needed to look. Building a new catalogue is still that but now it also has to support a range of customised outputs and in a timely fashion.

The key word for the new catalogue manager to understand is interoperability. There are many useful definitions of this mouthful of a word. My preferred one comes from the Dublin Core metadata glossary:¹ *The ability of different types of computers, networks, operating systems, and applications to work together effectively, without prior communication, in order to exchange information in a useful and meaningful manner. There are three aspects of interoperability: semantic, structural and syntactical.*

¹ library.csun.edu/mwoodley/dublincoreglossary.html

From this last sentence we can judge that most of the issues concerning interoperability revolve around 'metadata', currently the primary tool by means of which we are attempting to address, 'the upheaval in the means of describing and managing information resources'.²

As Jane Hunter, a metadata expert from DSTC in Australia, has it:

Some of the major disadvantages of metadata are its cost, its unreliability, its subjectivity, its lack of authentication and its lack of interoperability with respect to syntax, semantics, vocabularies, languages and underlying models.

So it is not surprising that some of us find this whole subject of metadata frustrating as well as fascinating, precisely because of the challenges of such contradictions between aspirations for the potential of metadata and its evident practical limitations.

Jane Hunter's comment published last year in *Library Trends* titled 'Working Towards MetaUtopia! – a Survey of Current Metadata Research' describes no fewer than fourteen different research areas, and each area has generated a multitude of technologies and standards. In a profession already replete with acronyms it is a difficult task, I maintain, to evolve even a basic knowledge about such an abundance of terminology (Ex. 1): there is very little duplication and overlap here: each of these tools does different things, separately or in combination.

Ex. 1 Abundance of standards (spot the ones that don't belong here!)

- MARC
- MARC-XML, MODS, Dublin Core, Onix, IEEE LOM, VRA Core, BLT...
- EAD, TEI, DC, MARC
- METS, SCORM, DIDL, ...
- DDI, FGDC, KFC...
- MARC AMC, EAD, DC, RSLP, ...
- RDF, OWL, SKOS, ...
- NCIP, ISO-ILL, ...
- OAI, RSS, ATOM, ...
- OAIS, OCLC/RLG, ...
- Z39.50, SRW/U, Xquery, ...
- SOAP, WSDL, UDDI, REST, ...
- GIF, TIFF, PNG, JPEG, ...
- XML, XSLT, ...
- DDC, LCSH, LCC, TGN, AAT, ...
- PURL, DOI, ISTC, URN, Info-URI, ...
- XRML, ODRL, DISCO..
- GIF, TIFF, PNG, JPEG, ...
- MPEG-21 DIDL, MPEG-7

² Erik Duval, et al. April 2002. Metadata principles and practicalities. *D-Lib Magazine* vol.8 no.4

I want to pick out just three from this set: XML, Dublin Core and METS. These are in fact the three metadata standards that I intend to use in combination in our current project, Archival Sound Recordings, which is supported by money from the UK's Higher and Further Education funding body. All the projects in this programme are encouraged to use the fifteen fields of Dublin Core, which is now most commonly carried in XML as the text format. So we will also be using XML. The likely scenario therefore for the compilation of metadata records is for descriptive data to be derived from our existing database, converted (or rather reduced) into Dublin Core, enhanced with additional information about rights and how the digital object was created, the whole ensemble expressed in XML. Since few database applications on the market until very recently support XML this may have to be applied as an interim operation: we will be working on a solution in the next few months, but you can be certain the metadata will not be hand-crafted!

XML has many qualities, the most important of which, for our purposes, are that it is flexible and scalable, it will migrate and override application obsolescence, XML's associated technologies, such as XSLT (for transforming XML instances) will indeed support many outputs from one single input.

So that's all right, then. IASA says, 'Support XML!' Sadly there's more, so much more.

XML is just structure. Erik Naggum, a Norwegian developer and commentator, responsible in part for XML's parent encoding system, SGML, has famously quipped: 'Structure is nothing if it's all you've got. Skeletons spook people if they walk around on their own; I really wonder why XML does not'.

We therefore have to put flesh and clothing on our skeletal XML instances and relate them to cultural contexts and specific purposes and user requirements.

Audio digital objects are complex and contain many internal as well as external relationships. In the Archival Sound Recordings project I am therefore interested in so-called packaging formats that can group together related files and actions relating to those files, such as: show me all the tracks that were originally on that popular music album; play this track first, then that one, at reduced speed [so I can compare them]; show me an image of the original record label. METS and MPEG-21, specifically that component of MPEG-21 called MPEG-DIDL, can support some or all of these requirements that are referred to within those standards as 'behaviours'.

There is an interesting debate evolving about the relative merits of METS and MPEG 21. In *Proceedings of the International Society for Optical Engineering*, Jeroen

Bekaert at Los Alamos, and others, provide a performance rating for each standard measured against criteria stated by the American OAIS reference model. MPEG-21 DIDL emerges as preferable by a small margin but as with language, practice prevails and already METS has been taken up extensively by the US digital library community and many people in Europe are also persuaded. My hunch is that libraries and archives will collaborate around METS while the industry and commerce opt for the MPEG standard. (Meanwhile the broadcasting community will collaborate around their own metadata schema: SMPTE). This would be an unfortunate repetition of the historic split between the library and industry communities over representational standards in the analogue domain where standards that we called 'bibliographic', they called 'sleeve notes'.

METS and MPEG-21 DIDL provide us with models for representing digital items in an interoperable environment. Other tools are available for modelling the information and cultural context of those items and these go by the collective name of 'ontologies', a term that will be familiar (in the singular) to students of philosophy, though in information science the meaning is different and is similar to classification schemes in the traditional context. The term has come to us from Artificial Intelligence research and can best be explained by looking at some of the things an ontology does. Taking the w3c definition as a source:

An ontology defines the terms used to describe and represent an area of knowledge.

Ontologies are used by people, databases, and applications that need to share domain information (a domain being a specific area of knowledge such as history or audio engineering).

Ontologies include computer-usable definitions of basic concepts in the domain and the relationships among them. Some ontology tools can perform automated reasoning using the ontologies, and thus provide advanced services to intelligent applications such as: speech and natural language understanding, knowledge management, intelligent databases, and electronic commerce.

One of the key concepts that distinguishes the domain of time-based media, is that very dimension itself – time. Time, in various guises, needs to be recorded and presentable in various contexts. A researcher needs to be able to determine chronological sequences of recordings, different interpretations of the same work over several decades, different attempts at a blues or jazz standard during the same evening. A listener (especially a broadcaster preparing material for listeners) needs to know about durations. A technical services manager needs to know about the different rates of deterioration of the carrier formats in the collection and the chronological sequence of versions created on different preservation formats. We need to have clear statements

about when recordings were made and released and also the life span (especially death dates) of the contributors, if our need is to determine the copyright status of recordings. And let's be frank, you cannot experience any content on the Web, legitimately, without a licence.

In this immensely important temporal dimension, the cataloguing of sound recordings has been inadequately served in the past by reference models that apply to the cataloguing of texts. The *IASA Cataloguing Rules* (1999) addressed some of these inadequacies, notably in Area 10 Item/Copy information and fortunately a number of ontologies, such as IFLA's FRBR and the ABC ontology and model, are hospitable and worth investigating closely.

FRBR has been of interest to the audiovisual community for some time: Annemieke de Jong's assessment suggests: '[The] important feature is that IFLA FRBR permits to distinguish different aspects of the same work: the distinct intellectual or artistic creation [WORK], the intellectual or artistic realisation of a work [EXPRESSION], the physical embodiment of an expression of a work [MANIFESTATION] and a single exemplar of a manifestation [ITEM]. These features make the model very suitable for the digital audiovisual environment, where it can function as a conceptual framework for digital heterogeneous media resources and multi-dimensionally structure several types of digital and analogue audiovisual formats and distribution channels'.³

In a more general sense, FRBR will also be important to us as it is a reference model for the third edition of the *Anglo American Cataloguing Rules*, due to appear within the next three years. Already a number of applications of the FRBR model can be assessed, such as VisualCat system at the Danish Library Center and the Variations2 Project at Indian University.

By all means, let us adopt the most robust and useful standards but let us always keep an eye out for our users. Always ask yourself, as the marketing guru Ted Levitt advises: 'What business are you in, and why are you doing this?'

Finally, there is an obligation on IASA to state a position on metadata. Metadata is encoding of data and, as I have suggested in this paper, presupposes input from all the teams working together in an audiovisual archive.

About eight IASA conferences ago (in Oman, to be precise) the concept of metadata first appeared in IASA business. An association policy statement and guidelines on metadata could have been useful soon

³ Annemieke de Jong, *Nederlands Audiovisueel Archief* in <http://www.schemas-forum.org/metadata-watch/d29/d29.htm> SCHEMAS Metadata Watch Report #8 (2002)

afterwards but I suspect it could have been premature. We need to ensure that we go far beyond statements such as 'we need a field for recording dates'. IASA guidelines must look at every level: data sets and encoding standards, packaging formats and ontologies. I have mentioned a few essential components for inclusion: I have omitted many others, such as persistent identifiers and digital rights management systems. The pace at which terminology has changed and at which new standards have emerged could have rapidly invalidated an earlier statement in a matter of months. But despite its apparent immaturity in relation to the exactitudes of discography, information technologies such as the XML group and the FRBR ontology are destined to persist and to flourish. They should now be the main focus of attention by anyone engaged in documentation and catalogue management.

Access to Digital Radio Archives

Pekka Gronow, Yleisradio, Finnish Broadcasting Company, Helsinki, Finland

Paper given at the IAML-IASA Congress, Oslo, Norway, 2004

The archives of Yleisradio (YLE, the Finnish Broadcasting Company) contain about 350 000 radio programmes from 1935 to the present. About a quarter of a million of these are on analogue tape. The rest are on unstable digital carriers such as DAT, recordable Compact Discs, Minidiscs and various multitrack tape formats. Like other similar archives, YLE has been faced with an uncertain future, with a large collection of slowly decaying carriers and mounting problems of maintaining the machines needed to play them.

About five years ago YLE initiated a plan to digitise the radio sound archives. The project was presented in the 1999 summer issue of EBU Technical Review (no. 280), and readers who are interested in technical details are referred to this article. A more recent description of the system can be found in Digicult, issue 4 (2003):

http://www.digicult.info/downloads/digicult_newsletter_issue4_highres.pdf

In brief, planning of the archival system was based on the following premises:

Integration of radio and music archives. Radio programmes and commercial recordings (insofar as they are converted into the on-line archive) are stored in the same database, to simplify access for users.

Best possible sound quality. Analogue tapes are converted at 48 kHz stereo/24-bit linear audio, with support for higher sampling rates. Born-digital radio programmes are archived in the original format (usually MPEG 2).

Compatibility with existing catalogue databases. The digital archive is linked to the existing catalogue databases of historical materials. As tapes and records are digitised, a link is added to the database, and users can retrieve the sounds through this link. The catalogue is also used to create a workbook for the digitising team.

Compatibility with existing and future production systems. New programmes can be sent on-line to the digital archive after they have been broadcast, and the accompanying metadata is converted automatically into the catalogue database. Producers can also upload archival materials directly to their production system.

A two-tiered system that combines browsing-quality sound for quick reference with production-quality sound. All the archival-quality sound

files are stored permanently on a tape robot with a capacity of up to 100 TB. All the browsing-quality files are on a hard disc with quick access time. Both are accessible for authorised users on the company's Wide Area Network, covering both the company headquarters and some 20 regional offices.

The basic archival system was built by the German tecmath company (now Blue Order) in co-operation with our own IT team. The links to our production systems were ordered from the Finnish firm Jutel, which designed the Radioman production system widely used by YLE. Some parts of the order had been delivered by October 2004, and we are now expecting delivery of the final components by the end of 2004, two years after the original deadline.

I am glad to report that today - with the exception of the missing components - the archival system is working quite well. During the next ten-year period we plan to digitise the entire historical radio archives and a significant part of our record library. As old analogue tapes are digitised on Quadriga and NOA workstations, the sound files are linked automatically to the existing catalogue. Conversion of DAT tapes also began last August on an NOA workstation.

The digital archive is now linked to our production systems. Today; nearly 99 per cent of all the radio programmes are 'born digital'. This means that new radio programmes, with accompanying metadata, can be moved on-line to the archive immediately after broadcasting, if we want to preserve them permanently. In this context, metadata not only includes programme titles, dates, and content description, but any accompanying materials in text form, including the entire manuscript, if it exists. Of course this makes great demands on the quality of the metadata created by journalists, but generally speaking the system seems to work reasonably well, especially with radio news, where the data is usually highly structured.

At present we are already receiving on-line as sound files, all the YLE radio news, and a significant part of the production of YLE Radio 1, our 'cultural' channel. Most of our other channels still use CDR's for archiving, or store their programmes on a local server, waiting for the day they can send them on-line to the central archive.

We are thus feeding the digital archive from two ends. We began digitising the historical archives chronologically, and by now we have digitised all the radio programmes from 1935 to 1965 and a selection of current affairs programmes from the later years. At present we are digitising selectively, concentrating on radio plays, our own music programmes, and news documentaries. The idea is to give higher priority from now on to materials that are likely to be used in current programme production, and save other

categories for later digitisation. Conversion of our DAT tapes begins with current affairs programmes from 1991 to 2004. At the same time we already receive new material in digital form, so all the new productions from 2005 onwards will be available automatically in digital form. Radio news bulletins from 1998 to 2003 (metadata + audio) are now being converted from the news production system to the digital archive; this process will take several months. In the centre there is still a gap, which we hope to fill in about ten years.

Digitisation Policy

Practically all the radio programmes in our archive are unique. If we do not preserve them, they will be lost forever. For this reason we are planning to digitise our entire radio archives in the long run (and to convert digital audio sound carriers into digital sound files).

Our record library will be digitised only selectively; beginning with the most frequently used music. Most of our music recordings are not unique, and we see no need to digitise the entire production of Elvis Presley (or even Sibelius) for posterity. CDs are converted into the on-line archive with CD-ROM players using EAC software. At present we have about 70 000 tracks of music on-line. Many less used CDs will still be kept on the shelf and lent to our producers as before.

Currently we have no plan to digitise our shellac and vinyl records, more than a million tracks, unless there is a clear demand from our producers. I expect that in the coming years there could be a small-scale project to digitise some of our most interesting domestic and international analogue recordings for future use. But I would like to see a plan by other institutions, such as the National Library, to digitise the Finnish recorded heritage. Fragile 78 rpm records, for instance, should be digitised in the near future for security reasons and easy reference. I am sure we could co-operate on a project such as this, but I do not see it as the prime responsibility of a broadcasting company.

The digital sound archive is accessible to our producers at all the YLE locations from Helsinki to Lapland. At present we have about 500 authorised users, and we expect the number to increase to about a thousand in a few years. We are still in a transitory period when the system is not always stable and many journalists prefer to work with traditional sound carriers. In the long run we will probably close down some of our personal services and move them on-line. We have the same plan as the banks: use the automatic teller machine on the street for ready cash and go inside the bank only if you have to attend to more complicated business.

Although the goals we set in 1999 for the archival system have largely been met, there are still many practical problems in the daily operations. Without skilled IT staff it would not have been possible to get it going. However, practical problems will be smoothed out eventually, and I have no doubt about the feasibility of building and operating large-scale digital sound archives. When the present mass-storage system is filled to capacity, we will be able to migrate automatically to the next-generation storage system. Meanwhile, intelligent software makes sure that our sound files do not become corrupted.

What next?

It will still take a decade for all our archival programmes to be on-line, but that day is coming closer every day. All the major sound archives are moving in the same direction. What then?

When all our recordings are available on-line, they could theoretically be accessible to anyone in the world who is on-line and has a sound card on their computer. This is obviously not going to happen for a number of reasons, which include copyright, data security, and economy. However, many things can happen, and it is time to start planning.

Although YLE has produced all the radio programmes in our archive, we cannot use them any way we like. Even if we only wanted to broadcast them again, in most cases we would have to pay additional fees to freelance journalists, authors, composers, actors and musicians. For most of our holdings, we do not have any Internet rights. The only part of our collection that we can safely use in an imaginable way is sound effects, because birds do not own copyright.

Data security problems must be self-evident to anyone who has ever had a virus on their computer. Our digital archive is connected directly to our production systems, and we cannot have viruses on the 9 o'clock radio news. As a consequence, the digital archive works only inside our company's firewall and cannot be accessed from outside. Of course, there are ways to overcome this problem: duplicate the contents on a mirror site, or build safe entries to the firewall. But all this costs money, and at present it would not bring us any immediate benefits.

In the long run, these legal, contractual and technical problems will be solved, because reuse of archival materials will benefit everyone. In many cases, though, it would not be free; someone has to pay for all the new uses. At present all the activities of our company are financed by TV licence fees and we cannot legally use this money for any purpose other than broadcasts. All the new services would have to finance themselves, or be subsidised from other sources. When one sees how difficult it has been for record companies

to market their own products on-line (and they already have the rights), one can understand why the directors of YLE have not yet been eager to introduce new services based on the radio archives. The time when we could offer all our archival programmes to paying users is still far off.

Meanwhile, we should begin thinking of the uses of digital sound archives in terms of user hierarchies. Copyright laws distinguish different types of use: private, educational, and commercial. All the materials in our digital sound archives should be available for academic research on a limited basis. At present Finnish copyright law does not yet allow this, but planned revision of the law should make it possible. If there are only a few outside users using dedicated, supervised workstations, our firewall could be extended to include these, or some other technical solution found at a reasonable cost. What this would require is one or several academic research libraries, which would host these terminals and supervise their use. So far I have not found any potential partners in Finland. Finland does not yet have a national radio and television archive, and no research library seems to need this service.

I am not certain how far these copyright exemptions could be extended. Would they cover research libraries and institutions abroad? Technically this would be possible. Legally, I do not know. Of course there are not so many researchers outside Finland who want to study Finnish-language radio programmes, but a third of our radio programmes and our archives are in Swedish, the other national language of Finland.

A broader educational use of digital sound archives might include public libraries, educational institutions and certain social institutions. We already have a precedent today, as the Finnish copyright societies permit us to make cassette copies of certain radio and television programmes for public libraries and hospitals at a modest fee. A similar contractual system might be possible for the on-line educational use of our archives. However, here I can predict greater technical and data security problems, and I suspect we would need a mirror site outside our firewall, which would mean considerable additional expense.

To summarise, at the moment we are still involved in the practical problems of building a digital sound archive. Digitisation of analogue tapes has proved easier and speedier than expected. The system is working well in many fields, but we still need better integration into our production systems. This will surely come when we acquire the next generation of production systems, perhaps within the next five years. Next month we shall be installing a new production line for the transfer of DAT tapes.

By 2015, YLE should have digitised the entire contents of the radio archive, but we still have most of our analogue record collection untouched. If I had to plan an IASA conference for that year, I would suggest the following items for the agenda:

- For the National Archives Committee: Digitisation plans of large sound archives, the decision of what to digitise, division of labour to avoid duplication of work;
- For the Technical Committee: Extranet connections between sound archives and on-line access for users;
- For the Copyright Committee: There will always matters to discuss.

Who Cares About the Sound?

George Brock-Nannestad, Historical Audio Consultant, Denmark

Paper read at the IAML-IASA Congress, Oslo, Norway, 2004

The sound archives compete with commercial re-issues of early material. There is no doubt that the archives have the material in-house, but getting access to it may be both time-consuming and expensive, and copyright has not even been mentioned. Commercial re-issues occur in a very narrow and commercially viable selection of the vast repertoire, and the price is very, very low; mostly less than 30 US cents per minute. The other problem with commercial re-issues is that they may disappear again when they are sold out.

If I want to defend academic standards, I must be the end user who requests access to originals - at the higher cost per item than commercial copies. I must represent the reason for having archives and museums at all: I must be the end user who will ask questions that cannot be imagined today, but who must not go empty-handed from the archive. In an attempt to provide an answer, while at the same time avoiding being swamped with material, all the archives have traditionally had to resort to selection, because they could not physically store everything and index it to facilitate access. Still, selection hits the future user very hard. My saddest personal example is from the Public Records office in the UK, where I wanted to read details from court cases that involved the Gramophone Co. about 1913. I got as far as the handwritten ledgers that proved the cases had indeed taken place, but the bundles of original documents were from a period in which only *sample* bundles were kept - and these samples did not comprise my cases. Bad luck, but life goes on.

Looking back at first-hand experience with sound archives over 20 years, I have noticed that they have moved from a reasonably stable situation to a rather turbulent one, where the media for preservation change materially and frequently, and require heavy investment. It may be noticed that in that period the emphasis has been on preservation and accessibility, and is now turning towards metadata, rather than on fidelity to the source in reproduction. Simultaneously, first-hand experience of the analogue media and their influence on the desired content has been reduced. There is good reason to believe that the ongoing transfer from analogue to digital will be the last transfer ever, at least as regards some analogue carriers.

The backlog is still stupendous, and if the transfer is made only with the guiding principle of "least interference", the burden of correctly reproducing the by then *digital* signal will rest on the future technical persons of the archive, and they will have neither the time nor the knowledge to present a

proper sound to an end user. For this reason, it may be argued that knowledge of the content and the expected future use of each recording should be the guiding factor for their last analogue replay. Doing it this way, which is more expensive, will maintain know-how in the technical staff, at least as long as conversion to digital takes place. We hence have two approaches:

a) "quick and dirty" [Fig. 1], with a bandwidth and resolution capable of supporting post-production to any desired quality in the digital domain, but without certainty that similarity to the output from the original carrier can be approached ,

and

b) "context-oriented" [Fig. 2], which is an investment in know-how.

The experience in archives is that there is plenty of good will, but rarely the funding to make a "context-oriented" digitization. We create recommendations that prescribe *calibration*. Calibration is an activity in which you change only one variable and record the result in order that you may either know you are working to prescribed standards, or determine this fact later. Archives that know their holdings and have long-term budgets will be able to perform some sort of calibration - certainly on more recent media, such as analogue magnetic tape, but less likely on earlier media. And we must not forget that every minute a tape recorder is used to reproduce a calibration tape is *one minute less* for transfer work. This is owing to the accumulating wear on the tone heads, and because the tone heads are getting more and more difficult to obtain. When we get to mechanical media, such as lacquer or instantaneous discs, phonograph cylinders, or commercial records, calibration is slightly more difficult, not to say impossible. Let us take an example.

Although I was not able to participate in the working meetings this year, I tried to run an informal quiz in the Technical Committee concerning "which transfer from analogue was not subject to calibration", but I had no reply.¹ The prize was a calibration record that I devised in 1982 for inter-archival exchange of content. It was described in the *Phonographic Bulletin* at the time and provoked two archives in the US to acquire it. Two archives in the whole membership of IASA! That should have told me something then already.

The answer to the quiz is deduced by a strange fact: I have yet to encounter a calibrating *cylinder*! This means that cylinder transfer world wide does not get calibrated in a manner that reproduces the replay conditions of cylinders. It is rarely admitted, but such is the case. I would like to make it known that

¹ During the presentation the audience was informed that the quiz had not been considered in the TC. Nobody volunteered an answer, and the prize was not won.

I expect to be able to deliver calibrating cylinders for vertically wired pickups in the course of the winter of this year. They will be made to order only.

Speaking of calibration: a few persons, including myself, have been involved on behalf of the Audio Engineering Society in creating a set of calibration records for lateral pickups. It is a long drawn-out process, and I fear that unless we can have an impression of how much archives world wide will spend on calibration records that do suffer wear during calibration and so need to be replaced regularly, they may never come into existence. In the worst case we would need to have a sort of subscription before the AES would dare to put the money up for their manufacture. I shall put the question openly on the iasaweb, and I hope to receive answers. If no calibration records appear, we shall know that there will in practice be no calibration, and the work we have been doing in the IASA Technical Committee will serve only to give archives a bad conscience. That is not a good reason for working in a Technical Committee.

Let us get back to the investment of time in the transfer. We know that for a mechanical record there could well be a factor 30, if it is a difficult case, and for a good tape typically a factor 2. What on earth is the time used for? Well, apart from pure handling there is a lot of adjustment of equipment (azimuth, stylus) and a lot of creation of process data that has to be kept with the transfer, as metadata, so that we know what was done. If the data has been conserved to a sufficient resolution, the signal manipulation may occur in connection with the later use of the data. However, who will have the knowledge to be able to interpret the metadata generated regarding transfer conditions and convert it into variables that may be operated on? In other words, who will be able to create a context-oriented replay for the end user?

In reality it may not matter much for most users. Nobody will care about the "real sound", because each age will have its own preconceived opinion on "period sound". We see it already today: the sounds that are added to all the early silent documentary footage is designed, not authentic. So, the only real use of sound recordings will be as *evidence* - of occurrences, of language development, of soundscapes. And for this you need as much and as diverse recorded material as possible.

The most reasonable approach - in my view - is to transfer *more* hours, including indexing, rather than making context-oriented transfers.² That is because I as the end user would rather have a large selection than a few samples. Do not mind that I originally called it "quick-and-dirty" - it is for the long-term good. Doing it quick-and-dirty means you can get between five and ten times as much digitized per month.

² From the audience Andreas Rathhammer felt that a nicer-sounding expression should be used

The *scenario* I envisage for sound archives is one where the sound is disembodied from any carrier, and any sound archive worth the definition must surely follow the sound, or rather the digital embodiment of the sound. For a brief period the sound archive will be permitted to maintain the original carriers for symbolic reasons, but they will surely fall into oblivion, particularly if there is no demand for original sound from the users. For some time it will be possible to argue that the original recordings are needed to document authenticity, because even if they are not able to provide more than degraded sound compared with the digital signal captured in the course of digitization programmes at present, they will for many, many years still have the capacity to *authenticate*.³ Alas, inevitably a simple certificate that is embedded in the metadata will at some stage be considered sufficient authentication, and the last argument for maintenance of a collection of analogue originals will have been entirely removed. Finances will see to that.

The consequence of this is definitely the final dying out of the knowledge surrounding the early media and their analogue reproduction. It does not matter in the long run that some knowledge was preserved for some time because of the use of context-oriented transfers. Furthermore, there is no reason that a sound archive in the post-modern sense should have the responsibility of knowing these things. They should stick to what they will have become good at: *storage of digital data*. A much more economical way would be to have museum-like *centres-of-excellence* where knowledge of this type is maintained through study, experiment, and reconstruction, just as it is done in some technical museums and World Heritage Sites. Only 370 km from Oslo by road is the world's only surviving and active Very Low Frequency transmitter, an Alexandersson alternator construction from General Electric in 1924. That has been on the UNESCO list of World Heritage Sites since July 2004. This proves that remnants of our industrialized 20th century are indeed eligible and accepted. I have yet to determine the principles of their conservation ethics.

In quite a parallel development, I do not see why the craft-like knowledge that went into early analogue recording could not be preserved per se for humanity in a facility separate from a sound archive: an internationally recognized facility that would have both early equipment and early recordings; a facility, in which there would be a need for audio technicians trained in the early techniques, and for conservation technicians of the type I educated in the mid-1990s.

It would remove the archives' worries about sufficiency, because they would only have a strenuous decade doing relatively simple quick-and-dirty transfers.

³ This is mainly due to their content of secondary or ancillary information, see Brock-Nannestad 1997b

From then on they could maintain the corresponding data and the influx of the digitally generated data. Any specialized needs, as well as assistance in context-oriented reproduction of *digitized* signals, would be referred to the internationally recognized centre. This we may call "Centre Charles Cros" or "the Edison Center", but I would prefer to call it "Centre Léon Scott", to honour the first person to fix an arbitrary sound on a medium with a time axis. The centre or centres would gradually absorb the superfluous original carriers and the superfluous analogue equipment, or at least co-ordinate national and regional repositories or Centres of Excellence.

Remember that all development of pickup cartridges for reproduction of the coarse-groove record stopped when the long playing record penetrated the market about 1952, and the technology for reproduction of magnetic wires froze when the domestic tape recorder took off in 1954. Development of necessary improvements to early carriers could take place in dedicated centres. I know it can be done, because I have done it small-scale with some assistance on the chemical side for the last 20 years.

Access to such centres would also be the answer for the very many small *research archives* dealing with collections that were created specifically for academic end users on the most diverse media imaginable. If international projects of co-operation such as those currently under discussion are to have a long-term effect, it is necessary for such centres of excellence to be created *simultaneously* with a long-term view. In other words, I offer this solution to the problem of Safeguarding the Documentary Heritage of Cultural and Linguistic Diversity. Sad experience in the world of cultural history shows, however, that projects usually create only short-term prestigious focus and a misplaced feel-good effect in politicians.

If we do not want to throw the knowledge and experience related to the recording and reproduction technology of the 20th century out with the bath water, meaning digitization, we had better start now. Let us have some permanence of *knowledge* for a change!

Discussion

[The responsibility for representing the views of others lies with the author in the following]:

Lars Gaustad informed the audience that he had asked for quotes on a calibrating cylinder (not the author's!) and was expecting information during the autumn.

Kevin Bradley considered that authenticity would be preserved in context-oriented transfers, however the author indicated that only a physical object

having primary and secondary information could provide for later independent assessment of authenticity.

Andreas Rathhammer felt that calibration at the original recording would be the only way to obtain a true sound at reproduction, but it might be difficult, because there was no standard of microphone placement. The author said that each commercial record company had had in-house standards, in particular

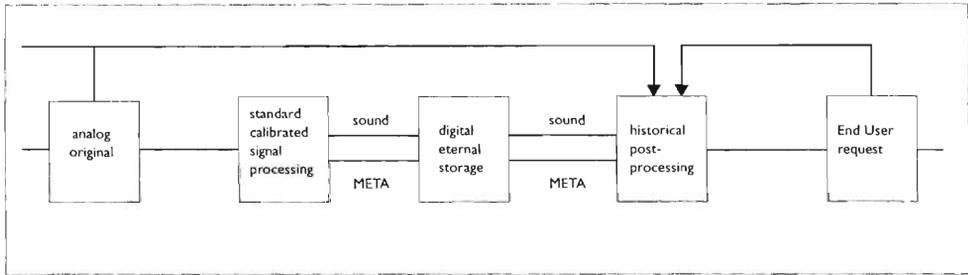
for microphone placements, that they had adhered strictly to in order to obtain the "sound" they were known for. Also the author, in teaching in the Tonmeister courses at the Royal Danish Music Conservatory, had taught "historical soundscapes", in which the spaciousness of early records was investigated.

References:

[Brock-Nannestad 1997b] Brock-Nannestad, George: *Applying the Concept of Operational Conservation Theory to Problems of Audio Restoration and Archiving Practice*, AES Preprint No. 4612, 103rd Convention 1997 September 26-29, New York.

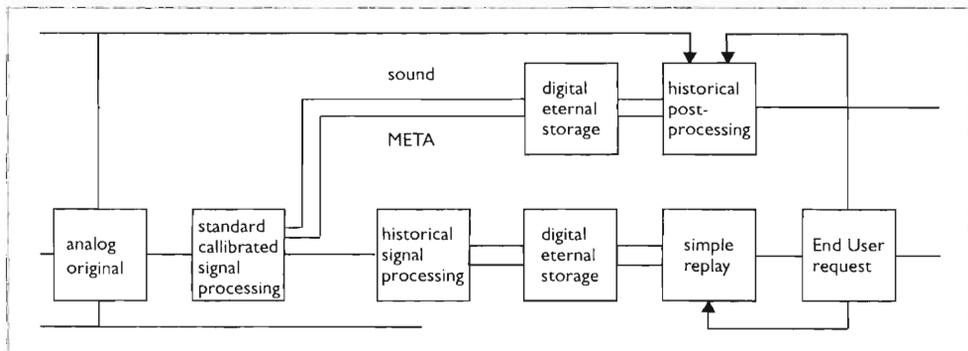
(The concept is introduced as unifying approaches in Conservation Theory in order to evaluate proposed preservation policies.)

Fig. 1: "Quick and Dirty"



Quick-and Dirty transfer uses a standard setting of equipment for reproducing the analog original, ensuring a sufficient Signal-to-Noise ratio and minimum distortion. Historical information regarding the context of the original (recording conditions, even historical replay conditions) is not taken into account until requested by an End User. The processing is performed until the End User is satisfied - this is a feedback situation requiring historical information that may have to be researched separately. The *Quick-and-Dirty* transfer may be regarded as the Basic Transfer for preservation.

Fig. 2: "Context-Oriented"



Context-Oriented transfer requires two items for storage: the result of the historical work and the Basic Transfer, which is identical to the *Quick-and-Dirty* transfer of Fig. 1. The End User may simply request reproduction of the *Context-Oriented* transfer or choose to work from the Basic Transfer. In the *Context-Oriented* transfer chain the historical knowledge available at the time of transfer influences that transfer and also consumes time. The Basic Transfer is still needed to permit deliberate manipulation, irrespective of type.

Analogue-To-Digital Conversion Viewed as an Alteration of Original Sound Documents

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Paper given at the IAML-IASA Congress, Oslo, Norway, 2004

These brief notes necessarily require a few preliminary remarks: the first is to acknowledge the importance of sound (audio and audiovisual) documents as **sources**, an idea I have upheld for years, having worked for so long in this field. Obviously, this involves accepting the extension of the concept of “source” to non-written documents (which should be duly acknowledged, since the idea of reproduction – photography, recording, and all the subsequent derivations – has become part of our daily lives). Photography and recording allow for unlimited reproduction of hundreds or thousands of “copies”. My field of research is music, therefore I will concentrate on recording (by this term I mean all the different methods of recording, sound, and vision with sound, as well as all the support used for the circulation of audio and visual reproductions).

Unlimited reproduction. Of what?

This calls for another preliminary remark, concerning *performing arts*: music, theatre, dance, and other art forms having the same basic characteristic, which is that – in order to circulate – they require one or more interpreters who are able to decode an author’s text (be it written or transmitted orally). The said text does not ‘play’ autonomously, in the case of music, nor does it ‘dance’ or ‘act’ by itself. True enough, nowadays there are multimedia works that play, act or dance (or do all three together) ‘by themselves’, and thus do not require a performer or an interpreter. However, it is also true that such multimedia works do not allow for ‘live’ performance (for practical reasons: their existence is the outcome of a complex technical procedure that cannot be reproduced in a theatre or concert hall). I will therefore not take them into consideration for the moment, and return to my preliminary remarks.

Music is a *performing art* requiring one or more interpreters in order to be conveyed to those who do not master the codes that are essential to deciphering its texts. Sound documents are consequently constituted by the recording of a musical (audio) or theatrical (audiovisual) performance.

Therefore, a possible reproduction does not involve the text of an opera, but its performance. The (sound or audiovisual) recording materializes into an object (cylinder, disc, tape, wire, etc.), so that the original sound document is constituted by one particular material object that can be reproduced *ad infinitum*, and, which I will call “matrix”. (Although the term is normally used only for the originals from which records are made, I cannot think of another

that would so exhaustively define an original sound document in every possible case). However, in order to obtain an infinite number of reproductions, it is evident that one cannot use the sole 'matrix', because in time it would wear out and eventually be destroyed, and the original would disappear. It becomes necessary to make 'pilot copies' of the original "matrix", which will in turn act as originals for subsequent reproduction. Incidentally, it is interesting to observe that a similar case is posed by a text, be it manuscript or typewritten: nobody would ever propose to send these directly to the printer.

My reasoning intentionally leaves out the problems posed by works composed directly on a computer keyboard so as to be reproduced, by means of the Web, directly by a 'matrix' that – if it needs to be reproduced – must be stored, with all the data that characterizes it, in a 'memory' of sorts, be it a hard or floppy disk, or any other technical support. I will intentionally omit discussing such works because I am firmly convinced that expansion of the Internet has profoundly changed the relationship between text original reproduction and circulation. I will merely remark that a composition conceived on a computer keyboard, and not 'saved' in a memory of sorts – at the present stage in technology – for all practical purposes does not exist, because it cannot be reproduced or recovered. (A good example is digital photography: if it does not undergo the above process, it merely results in a paper copy, which itself becomes an 'original' that cannot be reproduced directly, but only as a reprint, using a medium that is different from the one that created it.)

My assumption sets out from analog-to-digital conversion, so it regards only non-digital originals; thus it is time to get back to my line of reasoning. An 'original' sound document is, always and uniquely, the live recording of a musical (audio) or theatrical (video) performance. And the sole original is contained in the sound object produced concretely during a performance. It can be a cylinder, disk, tape, even film (it has been used to record sound), or any other support contrived by human ingenuity before the era of digital recording (which should, in fact, be called 'numerical recording', so as to define it literally). An original sound document can be produced by means of mechanic (acoustic) or electric recording (after the appearance of microphones), or by analog monophonic, stereophonic, quadraphonic recording on magnetic wire, tape or film, as well as by stereophonic digital recording (on tape or disc). Each of these recording methods (be it audio, or audiovisual) has specific characteristics that none of the others – even if technically more advanced – can repeat with precision. Theoretically, no reproduction can be considered such unless it is obtained by copying the original 'matrix' with the use of the same recording method and material. One characteristic all the pre-digital recordings have in common – which makes a great difference – lies in the fact that, in general, they are global recordings of sound (which they reproduce in variable percentages), whereas digital recordings disintegrate sound into an 'infinite' series of numbers.

Given that the 'original' sound document is constituted by a specific material object, created in the specific moment in which a performance (audio or audiovisual) is reproduced, how should the document be circulated (also for the purpose of its subsequent 'scientific' study) if it was created using methods and materials that have become obsolete and unavailable, and if it has become illegible using accessible means (even in museums)?

An 'original' sound document is always unique, and we are all aware of the caution that normally surrounds any direct form of contact with unique paper documents, be they handwritten or printed. Fortunately, a literary text can be transposed from its original manuscript to its final printed form without any substantial change, such as might alter the text itself and is not inherent to its original arrangement, purpose or pertinence. But what about a sound document? The elements at stake are so many and varied, all of them inherent to the 'text' of the document itself – which is not the composition but its performance (not any performance, but one specific, unique performance) – that a transcription is practically impossible. One should work directly on the original, which would consequently be transformed into something else and would no longer be the reproduction of that particular performance.

I have already mentioned that one or more 'secondary' matrixes are drawn directly from the 'original' sound document, using the same methods and materials as the original, in order to cater for the 'infinite' reproductions that allow for its circulation. So long as the same methods and materials are commonly used, there are no difficulties. But what about when they become obsolete? Or when the 'original' sound document is irreparably damaged? This is where 'secondary' matrixes come into play. They will originate 'adespota' sound documents, if we borrow the term from a different context. And they should be treated in the same fashion as the lost originals. But this is still not a solution. How will they circulate? Cylinders no longer exist, nor do many other methods of reproduction. However, so long as documents have been produced analogically, there is a subsequent method that could be used instead, if one is honest enough not to want to 'enhance' something that should be untouchable, and if another analogue method is used. In fact, analogue recording imposes some limitations, but it also has qualitative advantages, not all of which have increased with the use of digital systems.

Analogue-to-digital conversion of any sound document is equivalent to altering the original from its very foundations, in its very 'philosophy of reproduction'. Primarily, it is necessary to pose the problem of whether sound should be captured globally – though such globality will necessarily be 'unfinished' (or 'imperfect') – or by subdividing it, though such a subdivision will, in turn, inevitably be 'more than perfect', and therefore even further removed from the performance reproduced by the original document.

A brief historical overview of recording shows that the two fundamental changes in recording methods for the purpose of reproduction are connected to, firstly, the introduction of electricity (and the use of microphones, in the mid-1920's) and, secondly, the use of electronic technology (numeric recording, which came into use between the late 1970's and the early 1980's).

Consequently, serious problems in converting original sound documents are posed by 'acoustic (or mechanical)-to-electric', as well as 'electric-to-electronic' conversion. Both acoustic and electric recordings are analogue by nature: they capture the entire range of sounds produced at a specific time in a specific venue. Obviously, acoustic recording has the capacity to reproduce a limited number of sounds, compared with electric recording, which – on account of high fidelity and such – has progressively increased the quantity of sounds being reproduced to a considerable degree, since the beginning of the 80's. However, for the purpose of acoustic-to-electric conversion one can safely say that 'more includes less', so long as no technical 'improvements' are implemented (which has unfortunately happened time and again).

Before proceeding, it may be useful to mention that in nature there is no such thing as 'simple' or 'pure' sound; a sound can only be complex, as it is constituted by one fundamental note and all the harmonics it naturally produces, including those that are above or below the range of human perception. Moreover, in nature sound is perceived in its ambiance and, depending on the venue (but also in the same place at different times), it is perceived differently. The degree of variability is sometimes so infinitesimal as to be imperceptible to listeners, but that is not the point: it *is* different.

Numeric or digital recording is based on a type of sound that goes beyond nature: sound is created by rationally assembling a theoretically infinite quantity of numbers, each of which represents an infinitesimal segment of the sound being produced. All the notes are 'pure', deprived of their harmonics. Obviously, numbers can be created for harmonics as well, but those that are imperceptible to human hearing are very rarely included. I would like to point out an element that is considered undeniable in asserting the 'superiority' of numeric over analogue, which is that numeric recording does not allow 'noise' to be recorded. But it is important to point out that one such 'noise' is that pertaining to the ambiance, which characterizes every sound (or group of sounds) in its specific diversity.

As a result, electronics brought to light a type of sound that differs from natural sound. All the music produced electronically (multimedia or not) can be reproduced only by means of numeric recordings (no analogue recording could possibly reproduce all its characteristics, precisely because they are basically 'unnatural').

However, can an electronic recording 'faithfully' reproduce a live performance whose peculiarity lies in its being constituted by natural sounds? The spontaneous reply is negative. Nevertheless, it would be possible theoretically, if numeric recording were perfected to the point of reproducing sounds, harmonics (both perceptible and imperceptible), and the 'noise' of the performance ambiance. The problem that remains is of the **moment** in which these sounds were produced, which cannot but differ. This is to say nothing of the cost of this procedure, which would increase to the point of making non-digital-to-digital conversion an extremely unprofitable venture.

Digital recording fans go to the point of denying the existence of this problem, on the grounds that the superiority of numeric recording lies precisely in its **not** reproducing noise of any kind, including that which renders the sound of a performance (be it in a hall or in the open air) alive and 'vital'. In fact, 'sound technicians' always check the results of a recording wearing headphones that 'exclude' noise of any kind, and this habit probably results in an altered perception regarding their conception of listening. For technicians, 'perfect' sound is produced by excluding any 'noise', and the result is not natural but artificial; I identify it as 'digital sound' and, as I said earlier, it sounds 'more than perfect'.

A similar mentality has become widespread outside recording studios, so much so that the prevailing tendency is to consider digital sound natural, and natural sound artificial, besides the latter being considered 'impossible to listen to' and 'unattractive'. A case in point is an anecdote told by Sergio Segalini, currently artistic director of Venice's 'La Fenice' theatre, and one of the world's leading experts on voices, both live and reproduced in sound documents. The story goes that during rehearsals for the recording of a Mozart opera, the conductor asked singers to deliver unnatural ('digital') sounds, as these were more suitable for recording purposes, thus jeopardizing the performers' vocal well-being! This anecdote demonstrates to what degree digital reproduction has altered the perception of sound and consequently of music, especially in the younger generations, who are unfamiliar with natural sound and – when exposed to it – are inclined to find it unpleasant. On the other hand, one could hardly expect them to think differently, considering that the television, movies, records, and even the concerts they attend (which are always massively amplified) transmit only digital sounds. Moreover, Segalini's story goes to show that the habit of using digital sound has been introduced even in the realm of music education, as a type of sound to be produced artificially by natural means (especially in higher-pitched instruments such as violins, or sopranos in the case of voices). This objectively causes impoverishment and deterioration of those voices, which wear out more rapidly owing to elimination of the *messa di voce* and *legato* techniques, and causes irreparable damage to instrumental performance practice.

Thus, with the exception of electronic music and multimedia musical objects, the numeric recording of live performance is in itself an alteration. It is doubtful whether the recording of a 'digitally' conceived live performance could be considered altered. However, I feel this is a small consolation.

Now for the belief postulated in the title of the paper. What takes place with analogue-to-digital conversion, whether done live or in a studio? What happens is that the original is inevitably altered. Very rarely are digital conversions made by means of a numeric recording that takes into consideration those harmonics that are imperceptible to human hearing (I repeat: they are essential building-blocks in the production of a complex sound) as well as 'ambiance noise' (which helps to definite the 'quality' of sound). An additional reason is that – notably in the case of live concert or theatrical performance recordings – a number of adjustments are made (including emendation, restoration, deletion, integration) that do not belong to the original sound documents and not only alter it, but falsify it. On the other hand, supporters of the superiority of numeric over analogue claim that one of the advantages offered by the former lies in its allowing much more room for 'manipulation'. The original sound document – record, wire, or tape that first recorded the performance as it was taking place in a studio or hall – runs the greatest of risks. This is firstly because in most cases it is private property, which impedes (or severely restricts) its public safeguard. This does not allow us to find out whether a particular sound document corresponds to the original as it was first made (with all its background or accidental 'noise'), or if it was manipulated and thus falsified. Secondly, because even in those rare cases when sound documents are public property, the fixation on 'enhancements', or making the final product 'more presentable', is such that the original is exposed to the danger of manipulation and falsification, no more and no less than if it were private property.

I wish to conclude with a warning: even the most minute alteration of an original sound document does not go in the direction of saving it. Instead it destroys it, by making it different from its original self. Also, any form of conversion to digital (whatever the support may be) of a sound document originally created in analogue necessarily entails manipulation, and consequently alteration, thus destroying those intrinsic characteristics and peculiarities that make it unique, authentic and reliable.

Policy Guidelines on the Production and Preservation of Digital Audio Objects

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At the 2003 IASA conference in Pretoria I wrote in my introductory notes that, with regard to my technical qualifications, 'I was awarded a certificate of Electrical Engineering when CMOS was a new thing'. It was an attempt at humour, but somehow the irony of these objects being old rang true. Maintaining what was new equipment only a decade or two ago was now becoming problematic.

CMOS, or complementary metal oxide semiconductor, is a widely used type of semiconductor. Around 1980 CMOS was just beginning to provide opportunities for design that had not been available before, particularly its low power consumption, increased reliability, and low noise circuitry. Though the technology had been around for a few years, it was only just then becoming affordable and available. The new devices made all the old TTL technology look particularly inferior. Indeed, new generation CMOS is still used in computer technology. This led to a particular surprise when a service technician told me 'those early CMOS are pretty hard to find' and that he might have some difficulty repairing the Studer A820. CMOS chips form an integral part of the control circuitry of the Studer tape machines used extensively by archival collections, and the critical machine in question was unusable because the voltage comparator could not tell that the voltage levels were correct and sent out error messages that disabled the machine. The specifications of the chips had drifted with age. Aging of the components had occurred in a little more than 10 years.

The issue of machine maintenance is a serious one for the archiving community. The largest part of most archival collections comprises analogue magnetic tape collections, and the biggest risk to those collections will be maintenance of analogue replay equipment.

Collections of sound recordings are, in the parlance of the library world, machine readable records. They are linked to the devices that replay them. Without the ability to replay them they are, for all practical purposes, meaningless records. This is especially so for the tape recorded collections, which rarely carry much in the way of useful secondary information. Unless tape machines are available and working, tape recordings serve little or no purpose in a collection, except to occupy shelf space. The replay of the tape based audio collections, their transfer for preservation to a digital mass storage system, and ultimately continued access to their content is dependent on the availability of tape replay equipment.

Like all the technically based archives, the sound collection is, in a technological sense, at the mercy of manufacturers and the market for availability of replay equipment. The archiving community, in spite of its size, is not a market of sufficient magnitude to drive the development of types of physical technology. There is no choice, then, but to respond to the market in order to maintain technologically dependent collections. The audio market, after continuing to support the manufacture of professional reel recording equipment and related consumables since circa 1950, even through the first twenty-five years of digital audio, is now abandoning that market with astonishing alacrity. Where there were a number of manufacturers of analogue reel tapes, there is now only one; there is only one producer of analogue test tapes. With a small number of notable exceptions, the manufacture of open-reel tape recorders of any type has largely ceased, and manufacture of the professional archival standard tape recorders ended a number of years ago. Where there were 50 models of reel machines available five years ago, there are now fewer than six, from four manufacturers, and some of those are available only on demand.

In order for any heritage collection to maintain access to its sound recordings it will need to maintain existing replay equipment. As the equipment ages, the need for maintenance will become greater, and the requirement for spare parts become more crucial as the likelihood of failure becomes greater.

Studer told a meeting that included IASA that they would continue to guarantee tape machine parts for 10 years after cessation of manufacture of any model of their professional tape machines. This is an extraordinary offer and they have honoured it. Next year is the 10th anniversary of the cessation of manufacture of the excellent professional machine, the Studer A820. The Studer A810, widely used in the professional market, ceased manufacture more than 10 years ago. Already it is possible to see a reduction in availability of parts. Studer, under the constraints of the market, has revised its support down to five years.

Studer have indicated that some mechanical parts could be made in a workshop, but that some of the very specific mechanical parts cannot be made outside of a sophisticated manufacturing facility. To complicate the issue further it is important to remember that some mechanical components and some solid state parts have a limited shelf life, so the fall back position of cannibalising older equipment may not provide the necessary solutions.

As has been so often discussed of late, and as appears in the introduction of the Guidelines (TC 04): *The integration of audio into data systems, the development of appropriate standards, and the wide acceptance of digital audio delivery mechanisms have replaced all other media to such an extent that there is little choice for sound preservation except digital storage approaches.*

The transfer to digital is a critical process that takes a significant amount of time. A single operator with a tape recorder might expect to transfer 600-700 hours of analogue tape per year, depending on the reel size, condition and content. As a consequence, most collection owners can expect to spend a decade or two converting their collection to a digital format. Clearly, the problem that faces us is of maintaining out of production equipment for at least the next 15 years. It is necessary for this equipment to be available at a reliable production type level.

The National Library of Australia has a collection of some 37 000 hours of original recordings, primarily analogue magnetic tape recordings. ScreenSound Australia has a collection of some 52 000 hours of recordings of which some 25 500 items, or 15 000 hours, are analogue magnetic recordings. Both institutions own similar quantities and types of replay equipment, specifically 3 Studer A820s and 1 Studer A812 each, which we identified as the crucial machines to maintain. Both institutions include, in their management and technical structure, technical staff with a commitment to maintaining the equipment and an appreciation of the challenges that poses. It seemed obvious that there would be benefits for the two institutions in maintaining this equipment, if they could find a way of co-operating on this area. I should point out that both institutions own other machines of a lesser quality which, while being maintained in the usual manner, are not part of this co-operative project.

There are several factors that make the prospect of a joint machinery preservation and support project between ScreenSound Australia and the National Library of Australia a compelling study. ScreenSound was created out of the NLA, and the two institutions still have many ideals in common. They are the main member institutions of ASRA, the Australasian Sound Recordings Association, and, uniquely in Australian cultural institutions, they have embraced the concepts of good quality internal technical support and engineering of their sound preservation operations. Both institutions are very aware of the consequences of format obsolescence for the Australian National Collection. In particular, ScreenSound will be required to provide support for all the analogue tape formats from 1/8-inch to 2-inch, all the speeds, and all the track configurations.

It is now recognised world wide that the era of pure analogue recording technology is coming to an end. By and large, analogue techniques are no longer the techniques of choice in contemporary recordings. Manufacturers of both machinery and media are abandoning the technology, and supplies of such mundane items as good quality spools and end fastening tape are becoming difficult to find, particularly in Australasia. There remains only a single manufacturer of good quality open reel alignment tapes. Head demagnetising devices and other essential accessories are similarly threatened.

Survival of analogue replay capability depends on the survival of many aspects of analogue technology and engineering. It is not enough merely to select the most reliable, best quality machinery and then assume the issues will resolve themselves. Analogue recording equipment is effectively obsolete and the effects of this obsolescence are already in evidence.

The Studer A807 is modern classic broadcasting machine, with many thousands of units delivered. Production has relatively recently ceased, and the production line has been dismantled. It is unfortunately almost accepted practice today that as soon as a product is released onto the market, a major component is discontinued, to the detriment of the lifespan of the product. For the Mk-I A807, the sole manufacturer of a particular keyboard encoder integrated circuit discontinued production, prompting Studer to release an updated version of the machine using different components, and at the same time to stockpile the obsolete component so that support could be given to owners of the MK-I machine.

As a further illustration of this 'early obsolescence' phenomenon, a particular A807 power supply failed in service. Diagnosis of the fault revealed that a single electrolytic capacitor had become a short circuit, destroying several transistors in the process. One of the main transistors in the faulty circuit, the amplifier for the take-up spooling motor, was identified as obsolete and required replacement by an equivalent. The original transistor was obsolete, deleted from stock, a single-manufacturer production, and of limited application, to the extent that even basic data was not easily available. Studer, as part of their maintenance and support solution, keep records of suitable replacement components if possible, providing the possibility of continued operation and repair of obsolete electronic assemblies.

Other transistors destroyed by the original fault were not yet obsolete, but two complementary types were required. In the particular circuit, the replacement transistor must be of identical specifications and produced by the same manufacturer as the original. If these are not available, the complete set must be changed to preserve component matching and reliability. Original manufacturer replacements were no longer available, so two sets of six new transistors were required to complete the repair. Consequently, careful planning is required to ensure that large numbers of suitable replacement components are set aside against obsolescence. Obsolescence within obsolescence is a significant factor in the survivability of any particular machine type.

As a suitable starting point, it is much better to start with machinery that is still under support from the original manufacturer, instead of machinery that is already obsolete. Original manufacturers usually have more significant knowledge and resources to identify suitable replacement components than individual technicians or institutions. The Studer A810 and B67 models, for

example, are admirable performers, possessing many of the characteristics of preservation machines, but are long out of support and are consequently reliant on difficult, specialist repair and maintenance.

The Studer A812 and A820 models are excellent machines suitable for a joint preservation project involving the National Library of Australia and ScreenSound Australia. Certain A820 models are still in support, and the A812 has a lot of A820 features, sharing some mechanical parts with the familiar A810 and B67, but providing many more facilities that are useful to archival operators. The tape handling facilities of both machines - with software configurable control of supply and take-up tension in all the modes, and variable winding speed and tension - are particularly desirable characteristics. Some 18 000 1/4-inch A812's were produced, and about 9 000 A820's in either 1/4-inch or 1/2-inch configuration. A project recently undertaken by ScreenSound to copy a significant proportion of the National Archives of Australia/ Australian Broadcasting Corporation hydrolysed tape collection would not have succeeded without these machines, or others of similar design and capability.

There are several categories of components and subsystems in a modern tape recorder, and many modes of failure. Each of these categories requires individual, researched solutions under a proposal such as this. Each category is equally important, as the loss of just one category means the technology is lost.

Wear components: Each tape recorder contains a number of components that wear under contact with the tape media, or as a result of an operation carried out on the tape media. Each of these components is clearly identifiable and a solution is possible for each, given the co-operation of the manufacturer and careful, timely planning. Guide rollers, ball bearings, replay heads, capstan shafts, brake drums and pads, pinch rollers and alignment tapes all suffer potentially catastrophic wear over a period. It is crucially important to understand the nature of the problems that occur, and enlist the co-operation of the original manufacturer if possible. Wear necessitates refinishing or replacement of components. Consequently it is very important to secure sufficient stocks or information to: a) refurbish the existing component to a new standard utilising identified expertise; b) replace with a new or equivalent part from available stocks; c) remanufacture the component to original specifications. Of special interest are capstan motor shafts and associated systems. Just how many refurbishments by sandblasting are possible before replacement is necessary? Are there any special characteristics of the alloys used that are impossible to reproduce? How long can a polyurethane pinch roller be kept safely and in what storage conditions?

Electronic component failure: Unpredictable and potentially devastating, the failure of any number of obsolete electronic components can spell doom

for a tape recorder. There are several thousand components used in modern tape recorders. Generic passive components to the required specifications will always be available, but more sophisticated components; integrated circuits, programmable circuits and proprietary thick-film devices can be regenerated only with extreme effort. It will be crucial to hold multifaceted archives of integrated circuits, programmable, programmed and not, documentation of operating systems, programming tools, and other at risk semiconductors to ensure survivability. Even the shelf life of programmed chips cannot be assured. Already specialist component brokers cannot guarantee supply of specific late 1980's components.

Proprietary assembly failure: Every manufacturer commissions special items unique to their product lines. Each printed circuit board is a proprietary item, as is each capstan motor, spooling motor and optical frequency generator forming part of a jog-shuttle circuit. Remanufacture and repair of circuit boards is feasible, but motors are an entirely more complex problem. Until recently, Studer would supply new motors for the A820 series. In the future, engineers will rely on refurbishment, the help of OEM suppliers, and cannibalisation.

Third party support failure: (from alignment tapes to engineering expertise.) Alignment tapes are one of the single greatest issues facing survivability of top quality analogue replay. How will we ensure standardisation of replay? EMTEC/BASF no longer manufactures alignment media. When MRL ceases to exist, where will these supplies come from? Archiving collections of alignment tapes is the only answer. Given the difficulty of ensuring complete physical and electrical alignment of any given machine without jigs and suitable alignment tapes, these items must be preserved with the same or higher priority. There is little value in having all the correct parts if there are no expert technicians available to do the work. Engineering support and continual renewal of expertise are key components of the joint proposal. In Australasia it is important not to assume expertise will exist beyond 2020, by which time a significant proportion of analogue engineering experts will have reached or passed their compulsory retirement age.

Act of God: What happens if...? A relatively recent fire at the Studer factory has limited their capacity to produce tape recorder heads, necessitating a shift to outsourced manufacture. An earthquake in Japan halted production of the special glues that hold memory chips to their substrates, causing a world-wide shortage of components. It is highly unlikely that any manufacturer of obsolete technologies would rebuild a plant in support of obsolete devices. Preparation is very important.

Preparation, documentation and co-operation: Preparation, documentation, expertise and co-operation are key elements of this project. This is intended to become a useful study of archival practice for the future.

ScreenSound and the National Library of Australia have outlined a plan that identifies how a joint maintenance plan will be managed between the institutions.

The plan includes the following points:

- Determine method of purchasing, storing and sharing resources:
The two institutions will support and share resources and equipment through purchase and maintenance of a range of identified spare parts.
- Prepare an inventory/database of required parts:
Professional tape recorders have several thousands of separate components and assemblies. A database, which could be based on the official Studer spare parts database with Studer's co-operation, could cross-reference all the commonalities between the supported models. The database should support component datasheet links, supplier data, and inventory holdings. The database could then be used to identify crucial components.
- Secure copies of original manufacturer's specifications and drawings for crucial wearing components:
Studer tape recorders depend for their long-term transport stability and tape handling on the condition of the various rolling guides, brake mechanisms and head components. It is impractical to rebuild heads from scratch, but, should it become necessary, other mechanical components such as guides and rollers could be remanufactured, provided the composition and physical specifications of the original materials are known.
- Propose a method of documenting parts list and mechanical specifications:
The parts database will identify all the components, both mechanical and electronic, that are crucial to long-term survivability of the tape recorder. Electronic component obsolescence is a major issue, as is loss of programmed operating system data on failure of memory IC's and wearing of crucial mechanical components. Strategic analyses of likely failure rates, component shelf life and collection composition, magnitude and condition will enable accurate inventory requirements to be developed. Once identified, joint holding of critical components should be undertaken without delay. Major components that may not be remanufactured successfully, such as heads, should be procured in sufficient numbers based on projected collection requirements. It is a fairly simple task to identify required head life through estimates of wear supplied by the manufacturer. Operating system software should be conserved in three ways to ensure survivability: supplies of programmed memory chips should be held; supplies of unprogrammed memory chips should be held with requisite programming technology; system software should be preserved in data form and paper record for later reprogramming. Where electronic components are already obsolete, supplies should be sought immediately.
- Procure alignment media:
Recent cessation of the manufacture of alignment media by Emtec

highlights the need to secure all the crucial components well in advance. The remaining manufacturer of professional alignment media, MRL, will produce alignment tapes for all the formats on archival tape formulations. Alignment tapes wear and degrade rapidly, so significant holdings will be required for all the possible speed and standard configurations. Media should be stored in archive tape repositories under the best conditions for the best survivability. It is impractical at this time to consider tooling up for in-house production of these media.

- Ensure ongoing training and expertise of engineering and operational staff in tape recorder technologies:
It is crucial for NLA and ScreenSound to maintain, and extend, knowledge of tape recorder engineering and maintenance. Industry support and knowledge of this technology will decrease over time, relegating knowledge to enthusiasts, retired specialists and institutional experts. Existing Studer experts in Australia should be identified so that gaps in knowledge can be addressed.
- Foster industry support and develop directory of consultant experts:
Currently in Australia there are services available for remanufacturing components, sandblasting capstan shafts, relapping heads, and consultant maintenance. It is crucial for all the sources of these services to be identified and, if possible, for these services to be employed by ScreenSound and NLA both as efficient, top quality support, and as a means of extending the knowledge and experience of ScreenSound and NLA staff. Overseas suppliers should also be identified, particularly in the customised head and transport assembly areas, where larger industry concentrations will extend support life considerably compared with Australia.
- Share knowledge with other institutions:
There are other varied institutions in Australasia that are also struggling with these questions. Though they do not own the same equipment, and consequently could not join the same co-operative group, dissemination of skills and encouragement of private industry would benefit other institutions. The AWM and National Archives, for example, also use Studer machinery, although the much older A810 models.
- Identify second-hand market:
It may, in some circumstances, be advantageous to purchase second-hand replay equipment. ScreenSound recently purchased Studer A820 replay equipment through the international second-hand market.
- Prepare a letter to the manufacturer requesting support:
Though the manufacturers have indicated a level of assistance in the international forum, a letter requesting that support would be beneficial to continued relations.

Tyranny of distance: The distance that separates Australia from the major tape manufacturing centres and their collective expertise, knowledge and components, poses a significant challenge. A response to this problem cannot wait until after failures begin to exhibit themselves in the future. For all its

geographic size, Australia is a country that supports a small population. There are few specialist tape recorder engineering experts, and stocks of used and discarded machines are limited and decreasing. Of the total number of Studer A820 1/4-inch machines imported into Australia, all are believed to be owned by the National Library of Australia or ScreenSound Australia, and are already fully utilised in preservation studios.

Consequently, a lot of the technical expertise needed to support these specialised technologies resides in those institutions, or is associated with the importers of that equipment. It is vital for sustainability of the sound recording collections that expertise is encouraged among a younger generation of sound archivists. The task of transfer to digital storage is unlikely to be completed before the compulsory retirement age for either of us is attained.

Many countries share Australia's separation from the resources needed to maintain equipment of this type. However, even in the countries with rich technological resources, availability of the necessary parts and expertise is severely limited. This will become less only with time. Eventually, parts will become unavailable and the technologists will be well past their most productive years. The sophistication and subtlety of the Studer technology, which guarantees its immaculate performance, means that cannibalisation will not be a viable option. Even in the heartland of tape manufacture parts will eventually become unavailable, sooner rather than later, and the means of replaying tape collections to adequate and appropriate preservation standards (as specified in the recently published IASA guidelines on the production and preservation of digital audio objects) will be lost.

This project is not just about Studer tape recorders. It encompasses the basic principles that apply to all the tape recorder brands that are suitable for archival operations. It would be easy, probably, if all the institutions were Studer or perhaps Otari equipped, for example, but this paper is really a case study between two institutions that have Studer as their common marque.

Co-operative arrangements are a hallmark of the Australian cultural and heritage sectors. In order to achieve the necessary scale for the success of these projects, co-operative ventures are the most commonly applied strategy. Co-operation allows institutions of varying sizes to maximise benefits, while not in any way limiting the institutions' ultimate aims and aspirations, which could be quite different.

Co-operation is an extremely beneficial approach in this case. The nature of equipment failure is not entirely predictable. In this case a shared set of resources means better coverage of all the potential modes of failure and requisite parts. The same applies to technological expertise; being able to encourage private enterprise engineers and technical businesses requires the

expectation of a certain amount of work. The ability to encourage this involvement is increased by the larger size of the co-operative venture.

It would probably benefit many archives to consider a co-operative approach to maintenance of the equipment needed for preservation replay. This is especially so in under-funded archives that nonetheless have significant collections to preserve. If such co-operative approaches already existed, it is quite possible that manufacturers would still be producing the machines and parts we require.

Even so, the forward thinking and planning of equipment maintenance for preservation of the content of our collection should be an integral part of the forward planning of every archive.

Some Thoughts on the Impact of African Music

Rainer E Lotz, Birgit Lotz Verlag, Bonn, Germany

Presentation given at the IASA Conference, Pretoria (City of Tshwane), South Africa, 2003

The following is a transcript of an improvised presentation. No attempt has been made to smooth the wording of the free speech, but some illustrations are added that were not available at the time.

I

It is a bit unfair to let me speak after the eloquent Dietrich Schüller. Since I step in for another speaker I have no prepared talk and, therefore, must expose you to some improvised “small talk”. Also, I have no musical sounds to keep you awake. What is more, since Alzheimer is a real threat I may confuse some facts and figures, so please be kind to me. All I have of (Wolfgang) Bender’s paper is his abstract, and I have no idea what he intended to say. Instead, I shall share with you some of my own experiences and thoughts. At any rate, in order to evaluate the social significance of recorded African music and speech one must know when, where, why, by whom and for whom it was recorded. I have prepared a little hand-drawn diagram (**Figure 1**). Don’t take it too serious – but it should help me structure my talk.

II

Let me refer just briefly to the very early sound recordings. Germany being a colonial power, a lot of field work was carried out in Africa around the turn of the 19th to the 20th century. In Berlin the Phonogramm-Archiv was founded in 1900, and its scientists were busy in African countries from Tunisia to Ethiopia, from the Sudan to Southern Africa. Further recordings were no doubt taken by missionaries. It can safely be said that none of these recordings, not even those made by the missionaries, have had much social impact. All of them were unique, one-of-a-kind copies, which virtually disappeared in archives. The recordings made in the last millennium, some in the second-to-last century, are only now – slowly – being excavated. They are certainly invaluable documents and may document languages and musical styles that have since disappeared for ever. Only future decades will show what their value might be in respect of the social history of Africa. Few Africans, if any, have heard them since they were taken.

Now let us turn to what – for lack of a better term – one might call “circus Africans”. And I do stress that this term is not meant to be derisory! I was able to establish that hundreds and hundreds of people of African descent toured Germany alone during any year of the pre-World War I period. While some toured theatre and vaudeville as established entertainers, others were dressed up as savages and exhibited in zoos and tented shows, alongside with wild animals (**Figure 2**). Others could be viewed in so-called native villages,

where they also demonstrated their skills at handicraft and music. (Some of you may be familiar with my English language book “Black People”, published in 1997 with a CD attached, which traces the performances of early entertainers of African descent in Europe).

One Colonel Harrison travelled the world in search of wildlife trophies. After “exploring” India, Japan, North and South America as well as South Africa, he eventually visited the Congo to where he returned in 1905. Upon his return to Britain, in addition to stuffed rhinos he brought along six Pygmies from the Ituri forest, to exploit them at exhibitions (**Figure 3**). His translator was a shady German by the name of Hofmann, who had previously served as a servant for the explorer Stanley. To cut a long story short: the poor creatures also caught the attention of anthropologists, who insisted to completely undress the family of “six dwarf savages”, who were consequently weighed, measured, photographed, even X-rayed.

I hope I don't get this wrong, but my good friend Jeffrey Green found publicity postcards advertising the Pygmies. When he was tracking the Africans in Yorkshire he went to the museum where the colonel's stuffed animals and papers were deposited, and to his amazement, in a hidden cabinet discovered a series of four single-sided discs recorded by the Pygmies for the Gramophone & Typewriter Company in London (**Figure 4**). This in itself was a sensation. But that is not enough: one of the discs contains a narrative by the elder or chief, in which he apparently describes his impressions of Europe. This is perhaps the oldest example of recorded oral history. And it is by an African. And it presents the view not of a European about the newly discovered black continent, but an African's view of the Europeans. No other copy of the disc is known. It has never been re-issued or re-pressed. Up to this day few people know that such a disc exists at all. Nobody has ever attempted to transcribe and analyze the speech.

III

Let us now turn our attention to the “expats” – a term usually applied by us Europeans to fellow countrymen living overseas. But, of course, there have always also been Africans living in other continents. Most of those who lived in Imperial Germany went there for further studies and education at schools and high schools, but also to be trained in handicrafts or to be prepared for missionary work. A surprising number of those visitors also made sound recordings, moving images, and even sound pictures.

One volume in my ongoing series of books entitled “German National Discography” is devoted to “ethnic” music. The aim is to list any and all discs or cylinders recorded in Germany. Among the countries, languages and ethnicities that I have documented are: Cameroon, Congo, Ewe, Ful, East

Africa, Jaunde, Senegambia, Somalia, South Africa, Suaheli, Sudan. No Ethiopian or Amharic speaking individual ever recorded in Germany. Or so I thought. But not so long ago Wolfgang Bender came across 1904 recordings by an Ethiopian, taken and pressed by Odeon in Germany. Further research established that this gentleman, his name is Negadras Tessema, made a dozen sides altogether. As it turned out, he was sent to Germany by Emperor Haile Selassie (or was it Menelik?) to be trained as a driver and mechanic for the newest European invention – a motor car. While in Berlin this enterprising young man apparently self-financed the recordings. That in itself is a sensation. But then consider this: Still further research revealed that the very same recordings, recorded “acoustically” through a horn were repressed and sold by an Italian company right into the 1920s and 1930s. This achievement can only be compared with Caruso. But then consider this as well: Negadras Tessema was the *only* artist to perform local tunes in local language for a period of two or three decades. Every individual in Ethiopia spinning Ethiopian discs on a gramophone grew up, lived and died with this repertoire. The social impact is nothing short of mind-boggling.

IV

European gramophone companies discovered the African market as early as the 1920s, although the business must have been extraordinarily small. In relation to the average income, the cost of disc recordings, and especially the cost of a gramophone, must have been enormous and only the affluent could afford it. Even though the discs were pressed in Europe, nobody there took notice. The respective order numbers do not appear in any of the catalogues. The selection of artists and repertoire lay in the hands of local scouts, as the head offices in Berlin or London had no knowledge of the listening habits and social environments of Africans. The situation changed after the Second World War, and in particular during the early years of independence. The import and distribution of discs changed hands and became the domain of local traders: predominantly Greek and Lebanese in West Africa, predominantly Indians and Pakistanis in East Africa. There was a virtual explosion of independent small labels, and one must assume all had small press runs. The discs are very rare today, and hardly any research has been carried out to date.

On the occasion of the 30th anniversary of the independence of Sierra Leone, the German Ministry for Economic Co-operation and Development (to which I was then attached and which handled development aid) persuaded the German Foreign Office (which was responsible for cultural ties) to arrange for safety copies of all the 78rpm shellac discs in the possession of the Sierra Leone Broadcasting Service, as they had no more facilities to play the discs. The complete set and documentation was then handed over as a gift to the Sierra Leone Government. So far so good. Only a few years later the civil war in that country completely destroyed the building and all it contained. Our set of LP and MC transfers is now the only tangible evidence of local musical history which would otherwise have been lost for ever.

V

I lived in East Africa for some years during the 1960s and early 1970s. At that time I made the acquaintance of Mr. Manasseh Omwoma, owner of the Diploma Music Store in Nairobi. Mr. Omwoma was a living encyclopaedia of the recording and music business in East Africa. Over a period of some 60 years he managed ensembles, groups and singers; he organised recording sessions for others, as well as his own labels. He produced on demand music cassettes – anything from Luo church choirs to Kikuyu traditional songs to Congolese guitar solos. His office was extremely small; one had to crawl up narrow stairs to an intermediate floor so small you couldn't stand up. There he would crouch and copy MCs. These premises were on Nairobi's River Street, a sprawling business area, centre of life, both legal and so illegal that even policemen wouldn't patrol there in uniform. Omwomi protected himself by means of a hollowed pencil, into which he had inserted a sharpened bicycle spike, and he made it known that any potential attacker would have his eyeballs poked out. When I visited him he insisted on two of his sons acting as bodyguards. His secret was, of course, that he conducted his business right in the middle of where the action was, he knew exactly what his customers wanted, and he was easily found.

A few years later, at the time of the exodus of the Indian duka-wallah shop-owners from East Africa, he cheaply bought remaining stocks of 78s between Kampala and Zanzibar. He stored all this at his shamba (a farm) on the shores of Lake Victoria, a true treasure trove of African music; a paradise for me, where I "liberated" incredible music, for instance Seychellois recordings no Western collector or scholar thought ever existed. This happened to be the dawn of the microgroove LP era, and the music business has been in the hands of African businessmen ever since.

A couple of years ago, when he was far into his eighties, he handed over his business to his sons and founded his own church – as he explained it: less stress and more money. I have urged Bender to take a sabbatical in Kenya, liberate the discs that I may have overlooked – and interview Omwoni before it is too late. He won't live forever.

VI

I would like to close this little chat by returning to the Pygmies, and their perception of Europe. During the 1980s I organized a recording session at a traditional compound in Serekunda, Banjul, Gambia. Present: a troupe of griots and a friend of mine who plays jazz bass-clarinet. Today this may be termed fusion music, or world music. We had a terribly good time, the musicians would play the kora and drums, the ladies would provide an incredibly dense rhythmic pattern by hitting metal tubes and stomping their feet and my friend would provide jazz riffs. The griots would sing in traditional style. I put this out on an LP (**Figure 5**). Still today, whenever I play that record I get so thrilled, the hairs stand up on my arms.

I had a vague idea about the griots' duty to relate history and praise the rulers, or whoever pays for their services. I do not speak the local language – but I have a feeling that – at least on one track – they put us on and commented about us whites, just as the Pygmies did some 80 years before.

Thank you for your attention.

Fig 1: Rainer's little hand written note

CYLINDERS & 78 RPM DISCS		
DIASPORA	AFRICA	COMMENTS
	FIELD RECORDINGS	SCIENTIFIC EXPEDITIONS MISSIONARIES
CIRCUS PERFORMERS		"SCIENTIFIC", "CULTIC"
EMIGRANTS		RELIGIOUS COMMERCIAL
	VERNAICULAR - TRADITIONAL - MODERN COMMERCIAL	EUROPEANS LOOK FOR SCENES TRADERS (SCENES) AFRICAN ENTREPRENEURS PART OF URBAN SCENE

1890's
↓
1960's

Fig 2: Members of the Somali troupe, which was brought to the Hamburg Zoo by Carl Hagenbeck, and recorded by Dr von Hornbostel in 1910 at the Berlin Lunapark on behalf of the Phonogrammarchiv



Fig 3: The Pygmies and Colonel Harrison aboard the ORESTES on their 1905 voyage from Egypt to Britain, where they were recorded by the Gramophone & Typewriter Company



Fig 4: Label of a Gramophone & Typewriter shellac disc dating from 1905. The anonymous interpreter is presumably William Hoffman



Fig 5: Label of the Harlequin LP, featuring the Jali Musa Bolu Koi Ensemble (Manding) and Rainer Ernst (bass-clarinete), recorded in Serekunda in 1984.



Multimedia and the Preservation of Endangered Languages - Recent Developments

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Paper presented by Grace Koch at the IAML-IASA Congress, Oslo, Norway, 2004

Let us begin by looking at the urgent situation with regard to endangered languages and why we at this conference, with a focus on multimedia, music and archives, should be concerned.

'There is agreement among linguists who have considered the situation that over half of the world's languages are moribund, i.e. not effectively being passed on to the next generation. We and our children, then, are living at the point in human history where, within perhaps two generations, most languages in the world will die out.'¹

Ken Hale, who died in 2002 and was one of the foremost champions of endangered languages research, pointed out that 'during the coming century 3000 of the existing 6000 languages will perish and another 2400 will come near to extinction ... a catastrophe for human cultural and intellectual diversity'. (Hale 1998: 192)

Concerted efforts are being made world wide to record and to document endangered languages. Delegates here either are, or should be involved for the following reasons:

Although endangered language archives concentrate on word lists, narratives and other speech-based material, they also keep recordings of songs, which can contain archaic language and give clues to older forms of vocabulary and usage. These archives collect all sorts of multimedia, such as field notes, sound recordings, videos and photographs.

At least a third of the archives shown on the IASA web site hold material on endangered languages; research libraries and other repositories within IAML have material as well. Two examples of projects by IASA members are the Institute of the Languages of Finland with its work on Romani, and the publications of Tjeerd de Graaf on Pacific Rim languages.²

Recordings of music often include oral testimony that interprets the meaning and significance of the songs.

¹ Adapted from the Manifesto of the Foundation for Endangered Languages. IATIKU No.2, p.2.
<http://personal.cityu.edu.hk/~ctrandy/el.html>

² See deGraaf, Tjeerd. Linguistic databases: A Link between Archives and Users. In IASA Journal 13 (July 1999): 27-34.

Commentary on archival material may be collected later, often in local and frequently endangered languages. This invaluable companion resource provides another meeting point for language and other archives.

In the past four years, several high profile archives have been established to collect print and audiovisual data on endangered languages, digitise their holdings and, where agreed upon by speakers of the languages, make them available to the world via the Internet.

Endangered language archives are setting standards for cataloguing and digitisation that allow for efficient location and maximum transferability of data.

The relationship between language and music remains a fascinating but an under-researched area, and examples of musical styles from endangered language situations will provide a much wider pool of evidence from which to build hypotheses about this. Topics that need addressing include:

- Demonstration of the relationship between ordinary language and music in areas of pitch, stress, duration, and volume
- Examination of other performance styles that lie between music and language, such as chanting and declaiming of poetry
- Investigation of special phonology, grammar, and semantics appearing in song language.

Acoustic phonetics and other forms of sound analysis are developing more and more sophisticated tools. These have come about through both academic requirements and the needs of commercial applications in speech recognition and natural language processing - both of which have brought more funds and researchers into the field. This augurs well for expansion of the study of the music-language interface.

Let us move away from the subject matter itself and look at the archival perspective. Archivists need to know that an international group of linguists, computer scientists and web designers are working to assemble information on endangered languages. New archives are being created to preserve some of the material for posterity using digital media, and older analogue archives are being redesigned and digitized. In particular, archives are being created to facilitate *dissemination* of material in digital form, especially allowing downloading and/or on-line streaming of audio-visual material via the Internet. As well as making archives much more open to public use, these developments throw up new challenges in the area of intellectual property rights, including the moral rights of minority cultures and indigenous groups to intangible cultural heritage.

How will this activity affect audiovisual archives in general, and what will happen to the material that does not find its way into archives? It is our aim to examine some of the events leading up to the present situation, to look at recent activities, and to see what these developments can mean for audiovisual archives within IASA.

History

Linguists have always been concerned about the rate of language loss, but it was not until the 1990's that concerted international activity began to *define* which languages are endangered and to *disseminate* information about them. We need to keep in mind that the key word and driving force here is *dissemination* - not necessarily *preservation* of documentation.

Although language archives existed well before the 1990's, a series of projects during the last decade brought the importance of such archives to the fore, and funding initiatives linked to preservation of endangered languages sprang up. A timeline will outline some key events and projects in the international sphere:

1992

- Comité International Permanent des Linguistes (CIPL) approve a resolution to Unesco of the urgency of endangered language research
- Linguistic Data Consortium (LDC) established at University of Pennsylvania to create, collect and distribute speech and text databases, lexicons, and other resources for research and development purposes

1993

- UNESCO sets 1993 as a year to save endangered languages
- UNESCO Project, Red Book of Endangered Languages, begun in Tokyo

1995

- Establishment of Evaluations and Language resources Distribution Agency in Paris
- Beginnings of Foundation for Endangered Languages in England to fund research
- International Symposium on Endangered Languages in Tokyo and publication of the Newsletter of the International Clearing House for Endangered Languages
- Establishment of Terralingua³ and database of biodiversity and endangered languages

³ <http://terralingua.org/AboutTL.htm>

1996

- UNESCO and CIPL sponsor production of an Atlas of the World's Languages in Danger of Disappearing, under the editorship of S Wurm

1997

- International Congress of Linguists holds session on endangered languages at its meeting in Paris in July; a group of German linguists organise the *Gesellschaft fuer Bedrohte Sprachen* in November of 1997 in Cologne

2000

- Research into standardization of on-line endangered languages databases and beginnings of virtual digital communities for language materials, including endangered languages

2003

- Various endangered language archives exist, with funding provisions for research
- Encouraging aspects of the more recent developments include availability of much more significant funding for primary research into endangered languages
- Linking of such research directly to the development of audiovisual digital archives involving cutting-edge technologies
- Development of international networks to ensure common standards and interoperability

In addition to the above, a broader conception of linguistics as 'documentary linguistics' has enabled a richer record of the cultural context to be collected. This scheme goes far beyond linguistics as just the structure of languages, which had been its dominant focus of enquiry in the 1960's-80's.

Documentary linguistics makes the corpus of recordings and texts central. According to Woodbury (2003), a good corpus is (1) *diverse*, and (2) *large*. Production of the corpus is (3) *ongoing*; (4) *distributed* (in the sense that several or even many people may contribute to its compilation); (5) *opportunistic* (taking every opportunity that presents itself to record); (6) *ethical* (especially taking full account of the wishes of the language community in how to carry out the work and present the results). Materials built from the corpus should be: (7) *transparent* (understandable and usable by a wide range of people); (8) *preservable* (capable of being archived, with metadata, and retrieved); (9) *portable* (this refers mainly to the ability of materials to be read using different software and hardware - although literal portability would not be a bad idea and is becoming more feasible).

The push for linguists to document endangered languages, coupled with funds becoming available for this purpose, has required engagement with the latest technologies. In turn, there has been an unparalleled rate of development of international networks devoted to this work. This movement has stimulated a renewed interest in established archives that hold crucially important historical material.

The potential for web delivery of audiovisual resources has only just begun to be realised. Organisations such as the Linguistic Data Consortium can now make available corpora of speech in English and some other languages that enable clients to search for strings in transcriptions and play and/or download

files based on search results. For music, already we can search on incipits, or small portions of music notations. Projects such as OMRAS (Online Music Recognition and Searching)⁴ and our French colleagues at Médiathèque de l'IRCAM, Paris have showed us how to go beyond that process.

Recent Activities

The emphasis on endangered languages has inspired the creation of several funding bodies to encourage research, co-operative metadata initiatives to help set standards of digitisation, and description and virtual archival communities to preserve and disseminate their holdings. This brief listing shows only a sample of international projects and agencies.

Some funding agencies:

The Foundation for Endangered Languages, begun in 1995 in England by Nick Ostler, a linguist and language technology consultant. It maintains links with Unesco and other cultural agencies. It sponsors yearly conferences, issues a newsletter on-line, and funds projects that document and encourage the use of endangered languages.

The Endangered Language Fund, an initiative sponsored by Yale University and the Haskins Laboratory to offer small grants for language maintenance and fieldwork that benefits communities who have endangered languages. *The Gesellschaft fuer Bedrohte Sprachen* (German Society for Linguistics), founded in 1997 and based in Cologne, provides limited financial support for projects.

The *DoBes project* (*Volkswagen Stiftung*) can offer substantial funding for projects that document endangered languages and their cultural environment. Its archive is housed at the Max Planck Institute for Psycholinguistics in Nijmegen, the Netherlands.

⁴ A project sponsored by the Universities of London, Indiana and Massachusetts that can make a match between two pieces of music and can identify two versions of the same piece by examining a sound file. See http://www.dli2.nsf.gov/internationalprojects/JISC/OMRAS/Full_desc.html

The *Hans Rausing Endangered Language Project* (HRELP) trains linguists, awards research grants, and holds its digital archive at School of Oriental and African Studies in London.

Many of these projects are committed to use of the Internet to save endangered languages by providing funds for recording them, and an outlet for publication that is available in most cases to everyone around the world free of charge. Therefore, in a sense, their 'archive' facility would be the Internet. It is still necessary, of course, for component sets of the digital archival material to be housed in specific places that have stable institutional support, and preferably to be backed up in a number of locations in case of technical failure or withdrawal of support.

Among the users of these new digital archives will be minority culture and indigenous groups who provide language and cultural material, many of whom have concerns that their cultural rights and practices may be infringed upon by making all the material available unconditionally on the Internet. Most of the virtual archive communities to be listed below are well aware of these issues and are actively exploring ways in which they can be addressed. Once again there are important ways in which a dialogue between music and language archives could be beneficial. For instance, the dangers (as well as the advantages) of commercialization of 'ethnic' material are no doubt more evident in the music field (with the rise of 'world music' etc) and could be shared with the language archives community.

Some co-operative metadata initiatives and virtual archival communities:

A number of projects are working to create standards by which language materials may be archived and accessed in the virtual environment. You will notice a number of similarities in the initiatives, which shall be mentioned. Although they are international in scope, the first, IMDI,⁵ is mostly European-based and the second, OLAC,⁶ has more ties to the USA, Australia and Asia. Also, the focus of both IMDI and OLAC extends beyond endangered languages.

EAGLES/ISLE Meta Data Initiative (IMDI)

IMDI seeks to develop a proposal for a standard of metadata descriptions of Multi-Media/Multi-Modal Language Resources. With this standard in place, it will become possible to create a browseable and searchable corpus of such resources on the Internet. Users will be able to locate suitable resources efficiently. Also, the number of hits will help to ensure that the resources stay on line. IMDI standards are now being used by about 40 institutions in Europe. In 2002, the first International Workshop on Resources and Tools in Field

⁵ <http://www.mpi.nl/IMDI/> (26 July 2004)

⁶ OLAC was founded at the Workshop on Web-Based Language Documentation and Description, held in Philadelphia in December 2000. Its coordinators are Prof. Steven Bird (Department of Computer Science, University of Melbourne and Linguistic Data Consortium, University of Pennsylvania) and Gary Simons (SIL International). See <http://www.language-archives.org/>

Linguistics was held in Las Palmas at the Language Resources and Evaluation Conference (LREC) with over 700 delegates.

Open Language Archives Community (OLAC)

OLAC aims to develop a worldwide virtual library of resources on all the world's languages. The project is assembling an on-line database, similar to a huge Library Union catalogue. References will be made to all kinds of language resources, such as field notes, grammars, audio/video recordings, descriptive papers, and so on. OLAC is encouraging linguists everywhere to submit information about what they have; that is, to become 'a data provider'. The OLAC community is made up of 29 participating archives and organisations, at least seven of which hold audiovisual materials in addition to digitised texts. OLAC, whose metadata scheme is based on the Open Archives Initiative (OAI) and an extended Dublin Core, can actually convert existing catalogue data into a form that meets its standard. A brief description and a 'report card' may be read to see how closely the participating organisation meets the OLAC cataloguing standard. OLAC provides global search facilities across the archives that adhere to its standards.

Electronic Metastructure for Endangered Languages Data (E-MELD)

Funded by the National Science Foundation in the USA in 2001, E-MELD aims to develop a system for marking up and cataloguing endangered language data in accordance with community consensus of 'best practice.' It also plans to hold an on-line digital archive of ten endangered languages. This project works closely with OLAC and IMDI but is dedicated to work with endangered languages only.

Digital Endangered Language and Music Archives Network (DELAMAN)

DELAMAN, which differs from the preceding projects in that it does not seek to set metadata standards, has been set up to form an international network of archives to provide an on-line forum on practical matters that result from the experiences of fieldworkers and archivists, and to act as an information clearinghouse. DELAMAN is an open organisation in which any initiative actively contributing to documentation and archiving of endangered languages and music can participate. At present there are nine members, several of which use an OLAC cataloguing base.

What does this mean for IASA?

Archives with endangered language material are working together to digitise audio, video and print materials for preservation and for access purposes.

They are building up on-line resources and co-operative projects to further their objectives. The international community they are forming is actually operating within the purposes of IASA as stated in its Constitution, mainly, in brief:

-
- To strengthen bonds of co-operation between archives
 - To encourage activities that develop and improve ...audiovisual collections
 - To study and disseminate techniques relevant to the work of audiovisual archives and disseminate the findings
 - To encourage exchange of documents and information relating to them
 - To stimulate and further preservation, documentation and dissemination of audiovisual collections

Although few of these archives belong to IASA, their activities form a case study of how to work together to achieve IASA's goals in a particular interest group. Unlike most archives in IASA, though, they concentrate heavily on dissemination and look to the Internet for this purpose.

We, as IASA and IAML members, need to have dialogue with these archivists in order to learn from them, especially in the way they are setting cataloguing standards for their material. This means inviting them to participate in our international forums, ensuring they have input into our organisations and, where appropriate, vice versa. Dietrich Schueller, at the Research Archives Section, raised many of these points in relation to establishing an Action Plan for Safeguarding the Documentary Heritage of Linguistic and Cultural Diversity within UNESCO. And, of course, all of us need to ensure that the precious material they hold is preserved for the future. As the opening web page of the Endangered Language Fund says, 'When a language is gone, we can only awaken it from materials we have collected from the last speakers.'

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IASA's Identity – Who are We, and Who are Our Neighbours?

Crispin Jewitt, Immediate Past President, IASA Executive Board

IASA represents members working in a wide variety of business sectors, and we co-operate with other professional associations that also represent sound and moving image archivists. This raises two questions. Firstly, why is the audiovisual archives profession represented internationally by so many associations and federations? Secondly, does the apparent diversity of business sectors in which IASA members are employed inhibit our development and growth? In exploring these two questions, this short note seeks to offer a perspective for IASA members to understand the character of their professional association, and its potential for growth and leadership.

In our daily work we all, one way or another, provide services for organisations and individuals whose primary purpose is in an external business activity (the word 'business' is used here in its most general sense). When we provide access to material from our archives we are usually supporting a non-archival activity, whether it be content for the broadcasting industry, or audio material for an educational web site. Present and future users provide our ultimate professional *raison d'être*: to a large extent we depend on them for our funding, so if we are concerned about our future we need to understand the sectors in which these archive users operate. **Figure 1** presents a model of the principal sectors that provide a context for audiovisual archivists. These sectors can be recognised readily everywhere in the world: national governments and international organisations generally structure their activities and programmes around these key areas.

A number of familiar professional and commercial groupings operate in these sectors. The music industry and the film industry occupy the arts & entertainment sector, art galleries and museums fall into the heritage and culture sector, while libraries and archives co-habit as principal residents of the information and knowledge sector. A fourth sector, including both publicly funded and commercial activity, is the media and communications sector. Here we find broadcasters, the print media, and the advertising industry. **Figure 2** illustrates these business areas and shows that the sectors in which they operate are not discrete, but have significant overlapping areas.

Further consideration of this model raises the question: How do audiovisual archives, in all their rich variety, fit into this model? Is there any correlation between these groupings and the membership of our professional associations? **Figure 3** provides some answers to the first of these questions. Film archives, traditionally close to the arts and entertainment sector that generates the content they cater for, sit in the overlap between that sector and the heritage and culture sector. Radio and television archives, serving the pervasive media and communications sector, have responsibility for content from both arts



and entertainment, and from information and knowledge, so they also sit in another area of overlap in this conceptual model. Mainstream archives are both information providers and custodians of heritage: this duality is reflected in their position in **Figure 3**, in the overlap between heritage and culture on one hand, and information and knowledge on the other. Audiovisual archives, including a large part of IASA's membership, occupy a central position in this model, one that arguably places the association in a strong position to bring leadership to a profession that is so often subject to the mutually exclusive agendas and priorities of parent or funding bodies that are unaware of, or uninterested in, each other's shared need for the professional skills of audiovisual archivists. IASA's opportunity is its unique ability to build bridges between itself and its adjacent professional areas. These diagrams illustrate the proposition that IASA is uniquely well placed to broaden its membership base and lead development of the emerging audiovisual archives profession.

Fig 1: External business sectors

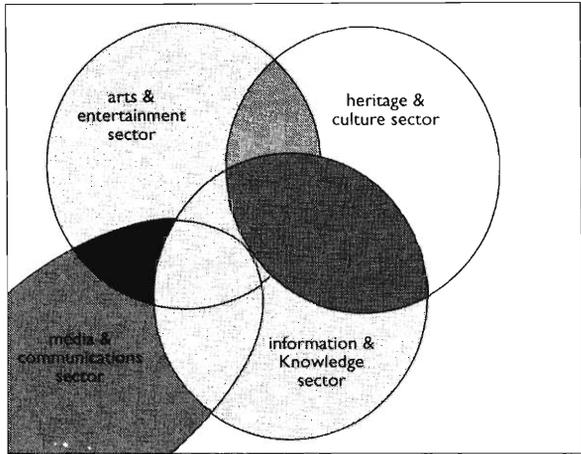


Fig 2: Business areas within sectors

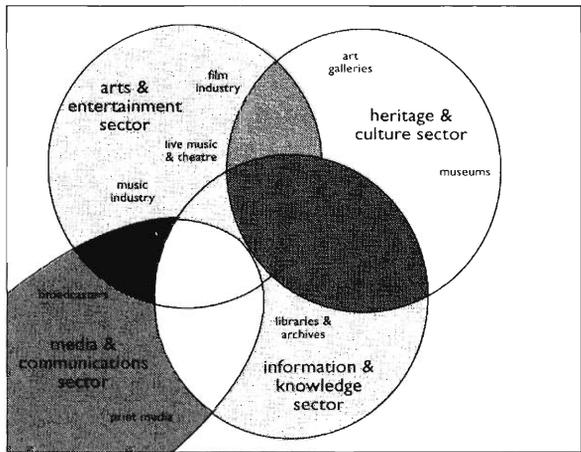
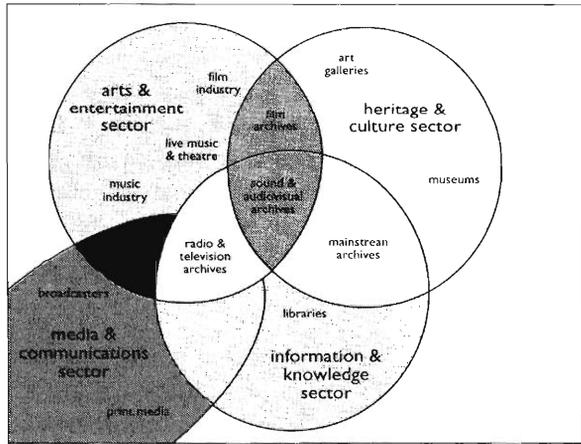


Fig 3: Audiovisual archives and sectors



IASA Technical Committee: *Guidelines on the Production and Preservation of Digital Audio Objects, TC04*

Editor: Kevin Bradley

Contributors: Kevin Bradley, George Brock-Nannestad, Mathew Davies, Lars Gaustad, Ian Gilmour, Michael Risnyovszky, Albrecht Häfner, Dietrich Schüller, Lloyd Stickells, Jim Wheeler

IASA 2004

80 pp.

Review by Pekka Gronow, Radio Archives, Finnish Broadcasting Company, Helsinki

In the past few years, IASA has published several important guides for sound archivists. In 2001, the Technical Committee produced a paper on ethics, principles and preservation strategy (The Safeguarding of the Audio heritage). In 2003, a special 'task force' produced a document on 'Selection criteria of analogue and digital audio contents for transfer to data formats for audio preservation purposes'.

Both documents cover a wide range of topics, but I think it is fair to say that the following conclusions can be drawn from them:

- All the analogue sound carriers are, to various degrees, becoming obsolete. The authors of the new technical guide define obsolescence as the situation 'when there is no longer any industry support for manufacture and reproduction of a format'. Some types of sound carriers are already threatened by degradation. Replay equipment is also becoming harder to replace and maintain. On technical grounds alone, there is an urgent need to convert certain types of materials into new formats. From the viewpoint of preservation, some carriers will probably remain safe for quite a while, if they are properly stored in archives in their present format. Even here conversion into new formats may be motivated for economic and practical reasons. In all cases, the originals should also be kept permanently.
- As the Task Force on Selection notes, 'around 1990 it became clear that the only viable method of preserving audio contents in the long term is by transfer into the digital domain, and subsequent migration to new formats wherever the need arises'. However, digitisation alone is not the solution as digital formats can also become obsolete, and even widely used digital audio formats can exhibit serious problems from the viewpoint of preservation.
- The recommended long-term solution to audio preservation is the use of Digital Mass Storage Systems, but the operation of such systems and conversion of existing collections presents many practical problems.

The IASA Technical Committee has now produced a guide that goes many steps further. It addresses the technical problems involved in digitisation and conversion of archival collections, and planning and operation of Digital Mass Storage Systems. Moreover, the guide suggests alternative solutions to (smaller) archives that are not yet able or willing to adopt such systems. The guide is essential reading for every sound archivist, including those who are not personally responsible for technical matters. It is a logical continuation of work that was begun in the previous documents, and should be read in conjunction with them.

Perhaps the simplest way to present the new guide is to reproduce the table of contents here:

- Key digital principles and standards
- Metadata
- Unique and persistent identifiers
- Signal extraction from originals
 - Reproduction of historical mechanical and other obsolete formats
 - Reproduction of vinyl LP records
 - Reproduction of analogue magnetic tapes
 - Reproduction of digital magnetic carriers
 - Reproduction of optical disc media
- Preservation target formats and systems
 - Data and audio specific technology
 - Digital mass storage systems
 - Data tape types and formats
 - Hard disk drives
 - Small scale manual approaches to digital storage systems
 - Optical discs (recordable)
 - Magneto-optical discs (recordable)

As the table of contents shows, the title is perhaps slightly misleading. The organisations principally concerned with the 'production of digital audio objects' are record companies and broadcasters. The main task of the sound archivist is to preserve audio objects that have already been produced by others. In this process we frequently also have to copy and convert existing analogue recordings, and thus create new digital audio objects. The guide discusses all these aspects in depth.

The introduction provides a solid background on the preservation of audiovisual cultural heritage, key digital terms and metadata. My comments will focus on reproduction and preservation.

Reproduction of Analogue Originals

Signal extraction may not be a household word in every archive, but basically it is a matter of reproducing different types of sound carriers. As far back as I can remember, there have been discussions of the need for a technical guide for sound archives. In the heyday of analogue technology, there was an infrastructure of manufacturers, distributors and professional users such as broadcasters and recording studios. If archives did not have qualified technical staff, they could generally find professional advice outside their own organisations. But even in those days, information on optimal reproduction of obsolete formats, such as coarse-groove ("78 rpm") discs and cylinders, could be hard to find, unless one could find an institution that had extensive experience of such formats.

Now this infrastructure has largely eroded. Not only is equipment becoming more and more difficult to replace and maintain, but the number of people qualified to use it is also dwindling. In my own organisation, a large national broadcasting company, there are still technicians who are experienced in maintaining record players and analogue tape recorders, but there is no guarantee that we will have them ten years from now. Support for other old formats has largely disappeared. I am probably the only person in YLE who knows the address of a supplier of styli for coarse-groove discs.

On the other hand, with the help of new technology, it is possible - at least in theory - to construct new, better equipment for this purpose, and there is a very small number of experts who are highly qualified in this area (fortunately many of them are on the IASA Technical Committee). Soon sound archives will be the only major institutions with large collections of analogue recordings (private collectors are another source). Sound archives are traditionally underfinanced, and not all of them can employ specialised technical staff - least of all staff who are experts in all the aspects of historical recording technology. When new digitisation projects begin, or current employees retire, it is not at all easy to find qualified persons for the task. Even archives that have no immediate need to digitise their holdings, for instance because they are not unique, will have to be able to play them for their customers, if they are to be of any use at all.

From this viewpoint, there is a need for an up-to-date technical guide for sound archives on analogue recordings. This is not what the current volume sets out to do, and it is a major bonus that it also fulfils this task to some extent, but I would suggest that the excellent work that has been done here should be continued in some way to produce a more detailed handbook on historical audio formats for sound archives.

All the chapters follow the same internal structure. The authors begin with tasks that have to be done before any signal extraction can begin: locating the best known copy, cleaning and if necessary repairing it. The importance of these steps can never be exaggerated. In many cases sound quality can be considerably improved by proper cleaning of the original sound carriers. Some of the advice here is simply common sense (a commodity that is often in short supply), but there are also useful tips on cleaning and repairing various types of sound carriers. One problem, which is not discussed here, but which I have encountered frequently, is the removal of glue residues left from splicing tape. Various solvents can be used for this purpose, but it seems that different solvents should be used for different types of tape.

The authors then discuss the main types of analogue sound carriers and the methods of reproducing them: coarse-groove ('78 rpm') records, vinyl LP records (and 45 rpm singles) and magnetic tape.

Coarse-groove records are obsolete but not in danger of immediate degradation, except in special cases. The oldest ones are already more than a hundred years old. However, support for reproduction is very narrow. There are record players available for this purpose, but according to the guide, there are very few suitable pickups currently on the market. There is a need for a more detailed discussion of pickups and styli and their suppliers. The best ways of reproducing coarse-groove records are discussed at considerable length, but here again I would have welcomed more detail, a 'cook-book' approach. Some of the advice leaves the reader a bit hanging in the air, such as the suggestion that corrections for errors caused by misaligned recording equipment can be performed in the digital domain (p. 17). Certainly, but please tell us how to do it.

The previous IASA guides have already noted that 'instantaneous' or 'lacquer' discs are in immediate danger of degradation, and should be digitised as soon as possible. The advice given here is useful and quite detailed. There is also a useful section on metal masters but little on cylinders and vertical-cut records, although much of the advice given on other coarse-groove recordings is also valid here. I am glad that we do not have any belt-type dictation recordings, as the only advice is 'there are a few consultants who are able to handle these types of materials'. Names and addresses, please! But with any luck I shall probably be able to retire before I encounter any such recordings...

(This brings us to a bigger question: should the IASA guides mention specific products? Some brand names are mentioned, such as the Keith Monk record cleaning machine, others not. If there is only one dedicated moving-coil mono pick up available on the market (p. 13), why not name it, even if there is a danger that the information will be obsolete in a few years' time. More generally, there is a need for more information on suppliers of specialised equipment for archives - perhaps on the IASA web site in the future?)

Vinyl records are also discussed in detail, although the range of available equipment for their reproduction today is larger. I find the advice presented here sound and useful. The only point, which left me wondering, was the recommendation 5.3.3.4 (p. 20) on playing vinyl records wet. According to the guide, "wetting the record can dramatically reduce the incidence of clicks and pops, however, it has the effect of increasing surface noise in all subsequent "dry" plays".

I have no personal experience of 'wet' playing, but it is quite easy to remove clicks and pops today in the digital domain. What would be the justification for using a method that has harmful side effects on the original carrier? Perhaps it could be used in cases where the archive has two copies of the same disc, and both show some wear. The other, unwetted copy could be used in the future.

I was disappointed that the guide does not take a stand on the optical replay of vinyl (and shellac) records, beyond mentioning that 'optical replay is available for LPs and should be investigated before selecting any transfer equipment, however contact transducers, or styli, are presently more common, perceived as less complicated and preferred by some technicians'. We all know this much, but I would have hoped for more from such a highly qualified group of experts. What are the pros and cons of each method, both theoretically and in practice - if anyone actually has any practical experience with optical replay? Fortunately this question does not seem to be urgent, as our vinyl records seem to be safe for many years to come, and equipment for playing them is still available.

Analogue magnetic tape is quickly becoming as obsolete as coarse-groove discs. Professional quality tape recorders are hardly manufactured any more, and parts are difficult to obtain. I have a dozen almost new machines hidden in the basement of our archive, but I am warned that this may not be enough: the machines contain semiconductors and other parts which are likely to degrade in time, even if they are not used. Because of their chemical composition, all the magnetic tapes are destined to degrade as time passes. The only safe way to preserve them permanently is digitisation. It is not surprising that most of the mass digitisation projects currently under way concentrate on magnetic tape.

This is one of the most detailed parts of the guide, and it discusses every aspect of tape replay, from the 'cooking' of hydrolysed tapes to equalisation and speed variations. Special formats such as the slow speeds used in home recorders, cassettes, and multi-track tapes are also discussed. The authors briefly note the possibility of automating the transfer process, so that one operator can do multiple transfers simultaneously. In my experience this works well in practice, although I fully agree that 'the systems themselves seem to

achieve their greatest benefits on largely homogenous collection material that is well recorded on stable carriers', such as many broadcasting archives. I would not recommend it for research collections, which have heterogeneous collections in different formats.

This leads us to another question, which strictly speaking is outside the goals of the guide: comparison of costs and benefits. I think it is fair to say that the Technical Committee has taken a 'fundamentalist' stand on matters of technical quality and suggests that all transfers should be done to the highest possible standard. The author's note, for instance, that 'there is no reason to believe that a badly performed transfer into the digital domain will release funding in the future to make a better job' (p 18-19).

The insistence on the highest possible standards (such as the use of sampling rates of 96 kHz) is certainly motivated in situations where the degradation of the original carriers makes any future improvements unlikely, or impossible. However, in practice many archives will for various reasons transfer materials several times over longer periods. This is no justification for poor quality, but often transfers can be useful to customers, even if they are not of the best quality, and availability of digital copies can lead to wider use of archival materials – and, one hopes, also to better financing in the future. There is a need to plan digitisation programmes hierarchically, considering both cost and benefits. Some materials can be transferred only once, and this must be done in the best possible quality, but sometimes there may be good reasons to accept lower standards, if this makes it possible to provide wider access at a lower cost, and if it is possible to return to the originals when better quality copies are required. A typical example of this would be the possibility of reproducing coarse-groove records optically in large quantities, which has recently been demonstrated at IASA conferences. In such cases I would be prepared to accept poorer quality if it lowers the cost so much that tasks which would otherwise not be economically feasible could now be accomplished.

Reproduction of Digital Formats

Although digital technology has been with us for only a few decades, there already seem to be more obsolete digital than analogue formats. The guide presents a long list of formats that are no longer supported. Even such widely used technology as DAT is in danger of obsolescence, and institutions dealing with recordable CD discs report numerous problems, which suggest that the safest way to preserve these recordings would be to convert them into a more stable digital format.

The authors follow the same outline as before. Selection of best copy and cleaning are also relevant for digital sound carriers. Problems of reproducing DAT tapes and CDs are well-discussed and suggestions presented. However,

in a few cases I would welcome a little more detail. When the authors tell us that 'there are very few error measuring devices available for DAT or other magnetic carriers', the reader is again left hanging in the air. Why not mention these devices? However, compared with the reproduction of shellac discs, there is a large amount on information on DAT tapes and CDs currently available elsewhere, and I think the guide has done a very good job of presenting the main problems and recommended practices.

Preservation Target Formats

When everything has been digitised, it still has to be stored somewhere. Unfortunately there is no simple solution to this problem. As the authors note, data can be stored in various ways, and any preservation solution would require future transfers and migrations that must be planned for. They also note that 'if technological support is unavailable, or if the resources to replace the system within the required time are not forthcoming, the digital storage may put collections at risk'.

As a long-term solution, the authors recommend Digital Mass-Storage Systems, which are already used by many large archives. Such systems normally support data integrity checks and the automatic migration of contents into future storage systems. The guide contains a long section on mass storage systems, and presents examples of systems used by major sound archives. Digital mass storage technology is already used widely in many fields besides sound archives, and there is extensive literature on the subject, so one might feel that it is not necessary to discuss this technology in detail here. However, the authors have done a very good job of compiling information specially from the viewpoint of sound archives, and I would certainly have been very happy to have had this guide in my hands five years ago, when I had to take part in the selection of our company's mass storage system.

For many sound archives, mass storage systems are not yet economically feasible. For such situations, the guide offers two alternative scenarios. The section on 'small scale manual approaches to digital storage systems' gives advice on the construction of simpler systems, where sound recordings are stored as digital objects in file formats. I find this part very important.

In other cases, archives may prefer to use digital audio formats such as recordable CDs and DVDs. For short-term projects, this technology is quite useful, and for the smallest archives, it may be the only economically feasible solution. The guide gives advice on various recording formats, choice of equipment and blank discs, testing, etc. An archive that follows the advice given in this guide closely could probably live safely with simpler digital technology for a long time, although the guide suggests that in the medium term, data formats will prove more economical than digital audio.

The Technical Committee and the authors of this volume must be congratulated on the excellent work they have done. I am only sorry that this guide was not available sooner, but of course five or ten years ago much of the advice would have been different. Most of my comments have been requests for more details, and it reminds me of a Finnish saying: 'good food makes a man hungry'.

Anthony Seeger and Shubha Chaudhuri (eds.). *Archives for the Future: Global Perspectives on Audiovisual Archives in the 21st Century*
ARCE/ Seagull Books, 2004
300 pp.

Review by Chris Clark, British Library Sound Archive, London

In 1999, when the words included in this compilation of workshop papers were presented in Manesar (near New Delhi), it was common for individuals and gatherings of people to take stock of the future: a new millennium, new challenges in every walk of life. Why not a future for archives as well, or as the title has it, *archives for the future*? Could audiovisual archives, those self-appointed recorders of the present and custodians of the past, cope better and make a bigger impact in the new century than they did in the 20th? Or would the same challenges and frustrations familiar to the developed world of the Northern Hemisphere (such as outbidding competition for space and funds, and an apparent lack of interest from users) be replicated south of the Equator?

As one of the supposedly more privileged sound archivists from the developed world, I would be looking in any future-oriented publication such as this for signs that engaging with users (or 'access') is on the agenda, and that it is considered at least as important as preservation and acquisition. Libraries and archives in the UK now have to demonstrate their relevance to the present and a broad range of audiences, in addition to maintaining their worthy ambition to provide material for future research, just in case something is asked for. As my colleague Rob Perks stated recently: 'A crucial challenge for archives in the 21st century will be their ability to project their collections beyond the confines of their four walls. To remain relevant and valued they must inspire, excite, encourage and engage new audiences in new ways'.¹

So we should be thinking about projecting, not just protecting. The emphasis in this selection of papers by representatives of a new generation of sound archives is definitely still about protecting. Protecting, it has to be said, from a number of situations, climactic, political and sociological, that are unlikely to be encountered in the West. Even so, I had expected that an engagement with the Web would feature in more than a mere handful of pages.

The subtitle indicates a global perspective, but the material compiled here is devoted exclusively to the business of setting up and sustaining sound archives in the Southern Hemisphere. Fascinating accounts from 15 participants, including Valmont Layne from South Africa and Don Niles from Papua New Guinea, are set alongside theoretical presentations from IASA stalwarts Grace

¹ Playback, Spring 2003

Koch and Dietrich Schüller, and a significant consultative role is also performed by Tony Seeger, who has been a principal champion of this new generation of sound archives.

This is, effectively, a handbook based on a number of exemplary endeavours and experiences aimed at individuals who, mindful of UNESCO's championing work in the 1989 *Recommendations on the Safeguarding of Traditional Culture and Folklore* (though none of the writers, except for Tony Seeger, mentions this), are working to establish or to sustain research archives in difficult or complicated circumstances. Ngoc Thanh, Secretary General of the Vietnam Union of Literature and Arts Association, for instance, speaks about making provision for no fewer than fifty-four ethnic language groups in Vietnam, a scale of diversity incomprehensible to a Westerner. Also, we have to sympathise with Endo Suanda, an academic from Indonesia, who had every reason to be pessimistic after discovering 10 000 hours of field trip recordings reduced to mould.

The link with IASA is not confined to representation. Out of the workshop came the so-called 'Manesar Mandate', on the basis of which IASA's new Research Archives Committee was launched at the IASA conference a little over two years later in Arhus, a new, energetic and confident group in the association, full of potential.

Grace Koch's orchestrated debate between musicians, researchers and archivists (a piece of live theatre repeated at the Singapore conference with SEAPAVAA in 2000) epitomises a wider problem of mutual mistrust and a reluctance to engage in collaboration that could make life so much easier for all. The transcript of this debate should be required reading for those starting out in this profession, and I think that as a presentational technique it could bring issues into sharper focus than the studied tone of individual papers. Even so, Grace's 'seven crucial issues' that confront archives and her assortment of sensible strategies (in *Challenges to a Small Ethnographic Archives*) are a key to understanding the shared dilemma and to finding a way forward.

Pearls of wisdom and practical solutions of this kind (others are what to include in a recording agreement form and advice on suitable storage in humid climates) are nevertheless difficult to locate, as there is neither an index nor a detailed table of contents. The editors should also have sought guidance on page layout. There are many sets of guidelines presented here, but they are often difficult to read on account of unclear alphanumeric sequences.

Particularly relevant and thought-provoking is *Listening to the Andes* by Victor Alexander Huerta-Mercado Tenorio. Here the author looks at the interaction between rural and urban cultures, an inevitable consequence of large numbers of people migrating from villages to urban centres such as Lima. The argument

is that ethnomusicology needs to concern itself as much with studies of these change processes (in the elaboration and consumption of music) as it does with traditional cultures, in the interest of preserving them from the threat of 'global hegemony'. This would indeed be on my list of priorities for an archive looking to the future.

While I have suggested above that there is little concession to access, it is of course true that many of these new archives are by, for and about their local culture and community. But that does not mean a well-defined and sustainable presence has been achieved. Valmont Layne leaves an intriguing question hanging over his description of the admirable achievements of the District Six museum – 'in which proportions will we be a memory booth, a knowledge generator and a service to an emerging inner city community and a larger community of interests?'

Most of what we read in this compilation resides at basic operational levels, and repetition of words such as 'shortage', 'poor', 'unsuitable' and 'neglect' quickly builds up to a litany of deprivation. What is needed for the future of archives such as these is a strategic framework with which all are comfortable.

Many of them are associated with universities, which are themselves short of funds. And if they are part of an arts and humanities faculty that is already at the end of the queue for development funding, you may draw your own conclusion about how long these archival endeavours could be sustained. Perhaps the national libraries can be of assistance here, complementing the support of organisations such as the Ford Foundation. The recently announced *Endangered Archives Programme* administered by the British Library may be worth investigation.

So, what will the future hold for these 21st century archivists and their collections? A significant concluding comment is made by the Indonesian delegate Endo Suanda: 'The good thing is that at least some of us are still trying to find a better way and are **not giving up yet**'.

The establishment of audiovisual archives has historically been the result of determined individual effort. Sooner or later that effort has to be shared. A suggestion is made by Ali Ibrahim al-Daw from TRAMA in Sudan to set up an International Archival Network (IAN). On close inspection this appears to be more about international communication (a 'parallel media' is how it is described) than collaboration, and one expects that the ambitions and intentions behind this can now be fulfilled by the Research Archives Committee in IASA, rather than by yet another international association. In preparing the ground for that IASA Committee, this compilation has gone some way to throwing light on Endo Suanda's 'better way'.

Open Letter to the IASA Executive Board

George Brock-Nannestad, Historical Audio Consultant, Denmark

Executive Summary

In view of the change from being keepers of physical carriers to being keepers of content, archives are faced with a change in the definition of their purpose. For this reason IASA must change the definitions in its constitution. The open letter argues that it is premature to define ethical considerations for IASA until a definition of purpose and values has been expressed and agreed on. A procedure for obtaining this is proposed in outline.

The whole sound and audiovisual archiving world is confronted by a development that could not be imagined or envisaged when a number of sound archives decided to join forces in IASA. The development is caused by two simultaneous movements: digital storage media and the required equipment are reduced in price, and analogue storage media and dedicated equipment for these are being phased out and are on the verge of extinction. This development forces a brutal movement away from storage and handling of objects that have carrying of sound and audiovisual signals as their function, to storage and handling of *data* representing sound and audiovisual signals, frequently termed *surrogates*.

Recently the Executive Board determined that there was a lack of formalized ethical considerations in sound and audiovisual archiving, and the Research Archives Section was given the task of elaborating on such considerations. Even before this, I provoked the Technical Committee to expand on ethical matters in a coming revision of TC03, and the TC is now fully intent on providing, where relevant, the special technical viewpoint that falls within its area of responsibility.

However, if the work on ethical considerations is not based on an up-to-date definition of the rôle of sound and audiovisual archives, it will be next to impossible to tailor formalized ethical considerations to the needs of sound and audiovisual archives. We are in the need of a revised or more precise definition of the subject-matter handled by sound and audiovisual archives, because it is no longer likely that such archives will continue to be keepers of physical objects. We owe it to the membership and the archiving community at large to take the matter in hand.

Carriers vs Content

At present we have the situation that archives contain *carriers* of sound and audiovisual signals, the sound and audiovisual signals being the intended signals. Furthermore, the carriers carry other signals, secondary signals, which are only partly sound and audiovisual in nature, but which represent information

that was unintentionally impressed on the intended signal and which may have to be detected by means other than those used for the intended signals. This secondary information relates to certain aspects of recording and of storage. Finally, the carriers also carry mechanical imprints from the generation, storage, and handling of the carriers. In other words, the total information from a carrier for sound and audiovisual signals is far more than the intended signal. Apart from the carriers, the archives also have suitable equipment for reproducing the intended content from the carriers. However, it has never been the intention of sound and audiovisual archives that they should become technical museums - this has been emphasised again and again.

Now, the crucial question that will also decide the starting point for responsible work on creating formalized ethical considerations and recommendations is:

In the future, will sound and audiovisual archives concentrate on the intended signal and refrain from taking responsibility for the total information currently held in the form of physical carriers?

If IASA is to form and express an opinion on this question, it would be too far-reaching to be addressed by a committee on its own. It is an Executive Board matter, possibly informed by specialists drawn from in and outside IASA proper. The Constitution of IASA may have to be changed to reflect positively the awareness that is created by the changing conditions of archiving. We are likely to need to expand on the words 'sound and audiovisual documents' in Article II. At present, the definition encompasses *everything*, but that in effect means it gives guidance on *nothing*. This is so much more the case when the intended information is dissociated from the secondary information.

When the areas of responsibility have been determined, *then* is the time to consider ethical matters.

Loss of Potential

What would the sound and audiovisual archive *lose* by letting go of the carriers and equipment, and concentrating on the intended signal?

First and foremost, it would lose the ability to authenticate a recording by reference to an intended first-generation signal that needs a dedicated apparatus to enable its reproduction. This ability could even be provided by a severely deteriorated carrier, because there would be useful features even in fragment form. *An example: the famous Brahms cylinder, in which it is only just possible to distinguish (and thereby authenticate) the melody line and chord progression, but with greater certainty the basic rhythm. The further authentication, that it is actually Johannes Brahms playing, is obtained by source-critical work on the secondary information.*

This brings us to the secondary information: apart from what can be presented as *metadata* (and this is confined to the information that it is possible to suspect and extract during transfer to the digital domain), it would no longer be available. This means there is much information that it would not be possible to offer researchers. *An example: imagine that a future user desires to trace the export activities of a certain manufacturer of raw cinematographic film by comparing the shapes of the sprocket holes as they are found on films in documented collections. If a precise measurement or microphotographs has not been made at the time of digitization of the primary information – the images and sound – there is no way the archive could assist in this line of research.* Seen from a purely 'sound' viewpoint, such an archive would not be able to support discographical research properly, and the crucial question returns in this form:

Was it ever the intended rôle of sound and audiovisual archives to provide this type of information?

A supplementary question is, *if the sound and audiovisual archives are no longer capable of providing this type of information, then who is?* I have provided one answer in the form of the scenario I presented in 'Who cares about the sound' during the Oslo IAML-IASA Congress, in which I delegated this task along with that of maintaining the knowledge that went into creating analogue intended signals to a museum-like structure. However, museums are now in a similar turmoil, trying to find their place in a world of increasing digital dissemination. For this reason alone, it would help world-wide clarification of the future intentions of archives, museums, and legislators if these answers were considered in a responsible and concerted way.

What needs to be done in the near future?

In order for us collectively to find an answer to the above question, I would like to contribute to the discussion and to creating awareness of rôles and potential. I would also propose *one complete day of workshops* during the upcoming Barcelona Congress in 2005; *workshops* in which the information content of our sound and audiovisual carriers could be examined in depth. It would at the same time be a welcome introduction to the world of AV as a broader concept than just 'sound'. We must know what we have, and what we can provide responsibly in the future.

I would offer *myself* to co-ordinate such a day of workshops, because I have extensive experience of analysing information content and of teaching Operational Conservation Theory, which is based on the concept of information content. I would propose that four themes be treated in parallel workshops, and I envisage that each participant should be able to join two workshops and a Final Session in which the results of the various workshops are synthesized.

A rapporteur should be nominated for each workshop. The outcome would be – one hopes - a consensus on future rôles and values of sound and audiovisual archives in the form of a report to the IASA Executive Board. That would lead directly to a possible change in the definitions in the IASA Constitution, to be approved according to Section XIV of the Constitution. This could then lead to systematic work in the creation of ethical foundations for sound and audiovisual archive work. In my view, this is the correct way to go about it. If such an initiative were not taken, the whole sound and audiovisual archive world would be governed by haphazard technical developments, purely for commercial purposes without regard for the cultural heritage.

I am prepared to expand on the above to any degree required by the Executive Board, being aware of the calendar of planning for the Barcelona Congress in 2005. For the time being I append references to papers in which I have treated some of the fundamental issues.

References:

Brock-Nannestad, George. 1997. *Applying the Concept of Operational Conservation Theory to Problems of Audio Restoration and Archiving Practice*. In *AES Preprint No. 4612, 103rd Convention 1997 September 26-29, New York*. (the concept is introduced as unifying approaches in Conservation Theory in order to evaluate proposed preservation policies)

Brock-Nannestad, George. 1998. *The Requestor Decides - the Fundamental Ethical Issues When Dealing With Sound Recordings*. In *Proc. XII Colloquium Musical Informatics* (Argentini, A. et Mirolo, C., Eds.), Gorizia, pp. 159-162. (the result of a transfer will not be an absolute truth but will depend on the purpose for which a particular transfer has been made - the ethics are discussed)

Brock-Nannestad, George. 2003. *Do We Know What We Have?* In *Australasian Sound Archive No. 29 (Winter 2003)*, pp. 17-25. (the paper lines up a number of the many parts that constitutes the total information content, separated into intended information and secondary information)

Brock-Nannestad, George. 2004. *The Ethical Aspects of Restoring/Reconstructing/Modifying Sound for the Re-Issue of Films*. In: *Dominique Nasta & Didier Huvelle, Eds.: Le son en perspective: nouvelles recherches/New Perspectives in Sound Studies*, Bruxelles: P.I.E. Peter Lang ("Repenser le cinéma/Rethinking Cinema" No. 1), pp. 243-255.

(demonstrates how the concept of Operational Conservation Theory may be applied to modifications to soundtracks for films)

Brock-Nannestad, George. 2004. *Who cares about the sound?* Paper read at the IAML-IASA Congress 8-13 August 2004, Oslo, Norway, distributed on the web by the organizers, published with instructive figures in the IASA Journal, Vol. 24

**A Response to Kevin Bradley's letter, IASA Journal No 23, July 2004:
Or why we don't have all that long to transfer our tapes.**

Kurt Deggeller, President, IASA Executive Board

Many thanks for your brilliant technical arguments against my vision of the future of analogue tape archives. I think we can agree on everything you say, but we have to consider another case, too:

I don't know, whether, within 15 years, you plan to transfer all the tapes you have in your archive, and whether you are sure to get funding for this. If that is the case, you are a lucky man. In our country the perspectives are different. We were constrained to make a selection of 25% of our holdings and for the moment nothing is planned for the remaining 75%. Of course the question this raises is whether it makes sense to spend money on keeping the 75% that have not been selected. Some people think it would be better to destroy them and use the money for other parts of the audiovisual heritage.

I am against the destruction of these tapes and I am trying to find an economically defensible solution in the form of a 'very remote' off-line storage with limited access: a repository somewhere in the country, with a technical infrastructure permitting digitising of tapes on demand. This will be certainly necessary, because our selection would never cover all the needs of future users of audiovisual documents.

And there is another dream I have sometimes: could it happen, in a few years' time, that intelligent people invent a completely new method of reading magnetic information on tapes?

I am nearly certain we – the poor Swiss – are not the only ones in the world having to decide what should happen to deselected 1/4-inch tapes, and we will have to discuss this topic further in IASA.

Shrimp or Prawn? - that is also a question

Jacqueline von Arb, Norwegian Institute of Recorded Sound, Norway

During the past IASA-IAML Congress in Oslo, Jacqueline von Arb who served in the organising committee hosted a laid-back and outdoorsy "Norwegian evening". Jacqueline graciously bowed to pressure and agreed to include a synopsis of her musings regarding the Shrimp-Prawn debate.

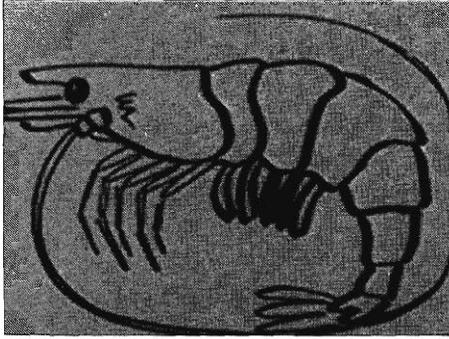
Sound archivists are a prolific and hard working group. We collect, manage and maintain enormous collections and wrestle with frustrations such as insufficient operational funding. To me at the Norwegian Institute of Recorded Sound, this means major challenges like caring for 250 000 recorded items for yet another year as its sole full-time employee, and minor ones like still having to do power point presentations...of the analogue kind! I therefore look really forward to those yearly conferences where I can meet my peers and "fill'er up" professionally, socially and gastronomically.

During the last IASA conference held in Århus, Scandinavia in 2002 I found myself unable to answer the primordial question: **What is the difference between a shrimp and a prawn?** I subsequently consulted with the fishermen at the harbour as well as with a statistically significant number of native informants, and in parallel, engaged in extreme googling to find relevant culinary and ichthyology sites. This brought forth new insights about subjects ranging from retrieval, storage, dissemination, access to ingestion - here is a short overview of this in-depth lay anthropological research:

A shrimp is a shrimp. And a prawn is, well, a shrimp! Many people use the terms interchangeably and a great number will call small crustaceans shrimp, and bigger ones prawns. Throw in the Italian terms "scampi" and "gamberi", and confusion reigns! There are however, two easy visual clues that are very easy to remember:

Firstly, prawns disseminate their eggs into the current while shrimp brood eggs. In February for instance, all shrimp would be holding on to a cluster of succulent caviar between their legs. This means that the shrimp either all turn to females in that season – or that equality of the sexes so prevalent in the Nordic countries has made its way to the shrimp society as well!

Secondly, the most obvious physical difference is that the prawn has abdominal segments like roof tiles – while the shrimp's second abdominal segment covers both the adjoining segments.



Prawn



Shrimp

The debate is not only restricted to the physical appearance of the crustaceans, but also about how to decapitate and disrobe the decapods. A professional shrimp-peeler does so in a swift two-step procedure. Norwegians usually have a three-movement technique but can't quite agree on which to take off first: the tail or the head. Incidentally, I've experienced that certain French subjects just avoided the whole argument and gobbled them whole. I assume it is for the crunch.

Two different schools of pink and gold gobblers emerge once the critters are denuded and ready to be arranged on a slice of white and rather tasteless bread. The divergence in consensus is about how to cement the seafood onto an open-faced sandwich, that is, whether the shrimp-glue (also known as mayonnaise) goes over or underneath the shrimp.

There are a few things a sound archivist like me likes better than to debate interesting customs with colleagues from all over the world into the wee hours of the night which is when a cup of *Karsk* is most likely to appear. This neck-wringing brew might just be the subject of the next presentation on peculiar Norwegian folkloric customs. I am looking forward to another two years of interesting research to find out which effect this mixture of "homebrew" and coffee has on the everyday frustrations in the archival world and whether it attenuates the technical paranoia many of us sound archivists feel standing on the threshold of digitisation.

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