

International Association of Sound
and Audiovisual Archives

Internationale Vereinigung der
Schall- und audiovisuellen Archive

Association Internationale d'Archives
Sonores et Audiovisuelles

Asociación Internacional de Archivos
Sonoros y Audiovisuales

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The archives, and in particular the audiovisual archives, of the developing world are at a crossroad. As places of memory, they need preservation desperately: that is, in the context of what we understand as preservation. The developing world has, over centuries, established ways of memorising and sharing its collective texts. But it is no longer enough. With the world changing rapidly and becoming more integrated, cultures are changing, and traditions such as storytelling and oral traditions are becoming seriously endangered.

There seem to be underlying tensions between the internationally accepted ways of archiving and the developing world's trying to make sense of the new challenges facing it. The first world has accepted its role as custodians of audiovisual archives within the parameters it set for itself, whereas the developing world understands its role of custodianship within the context of its age-old traditions. The developing world wants the international community to understand the context in which it has to preserve, but at the same time wants to – needs to – meet the challenges of modern ways of archiving.

It is important for both communities to understand what each has to offer, and to assist in the task of preserving those memories that otherwise would soon be lost.

This edition of the IASA Journal focuses primarily on archiving matters of the developing world. Elizabeth Watson from the University of the West Indies talks passionately about the position of audiovisual archives in the developing countries, taking the Caribbean as her point of departure. Christian Onyeji and Willie Anku give us an insight into their audiovisual archives, from their individual perspectives. Christian Onyeji examines the Igbo culture of Nigeria, and explains audiovisual archiving from the Igbo cultural point of view.

Many of you have asked for Willie Anku's paper to be published, after hearing it in Pretoria. Willie Anku's paper does perhaps not strictly address the matter of audiovisual archiving, but it is interesting with regard to African music and as a way of *reconstructing memory*, as Willie calls it.

You can also take a delight in Matthew Davies light-hearted look at memory and reconstruction of the past. Drago Kunej presented a tutorial on his experiment with CDRs and has rewritten it for this publication.

In this edition we also bring you a review of the Sound Documents from the Phonogrammarchiv of the Austrian Academy of Sciences, *Series 5: The Collections of Rudolf Trebitsch*. We received contributions from our readers as well, and would like to encourage 'sound' debate among ourselves on matters that have an impact on our work and on promoting an understanding of our task.

The conference in Oslo is a month earlier than usual. We hope to see you there and trust you'll find the joint IAML-IASA conference stimulating. The theme 'Music and Multimedia' certainly suggest an interesting and thought-provoking conference.

This will be quite a busy summer, starting with the Joint Technical Symposium in Toronto (24 to 26 June), the IASA-IAML Conference in Oslo (8 to 13 August), and finally the International Congress on Archives in Vienna (23-29 August). IASA is involved in all three events, which will reach a manifold public of professionals.

JTS 2004 is organised jointly with our sister associations that form the Co-ordinating Council of Audiovisual Archives Institutions (CCAA see also www.ccaaa.org), so a large number of specialists in sound and moving image preservation will be present. JTS, which is held every four years, is an important reference point for all the technical questions. At JTS 2000 in Paris, for instance, the quality and life expectancy of CD-R was a central topic. Since then, we have learnt that CD-R is definitely not a carrier for longer-term archiving. At the first JTS, in 1987 in Berlin, the bad news was about the Vinegar Syndrome, which strikes certain acetate based film materials. JTS 2004 will be the occasion to make the point on preservation and access to digitised and digitally born materials, and the new problems arising from that.

At our annual conference in Oslo we will again meet our colleagues from the music libraries. Even if they have many interests in the field of managing paper materials, they are also concerned about preservation of sound and images. Therefore I am particularly happy that we have found a large number of topics for common sessions under the overall theme of 'Music and Multimedia'.

A really new experience will be our participation in the International Congress on Archives. For the first time, in that way IASA is addressing a larger public, which is not specialised but certainly concerned about the problems of audiovisual archiving. We hope to develop initiatives of this kind in the next few years.

During and after our Annual Conference in Oslo a Nominating Committee will begin its work of finding candidates for the board elections next year. We hope that this time a sufficient number of members will be prepared to be candidates.

Since the first part of the World Summit on the Information Society (WSIS) was held in Geneva in December 2003, I have gained the impression that awareness of the problem of preservation and access to information has increased. IASA should take this opportunity to improve its visibility and play a more active part in the second phase of the summit, which will take place next year in Tunis. During preparations for the Geneva conference we noticed once more that our organisation is too small to get a hearing in such a large context. Therefore we have to develop partnerships with other organisations that have similar interests. I am convinced that the time when every small group of specialists could act in splendid isolation is definitely over. If audiovisual archiving in the future is still to be considered a matter of interest, we will have to find new and more efficient forms of co-operation.

*Kurt Deggeller
June 2004*

Luxury or Necessity? - Sound Archiving in Developing Countries

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Paper presented at the IASA Conference, Pretoria (City of Tshwane), South Africa, 2003

Introduction

The role and importance of archives are well established in developed countries. UNISIST's comment that 'it is widely acknowledged that efficient and publicly accessible archives are the foundation of democracy and good governance' (p.8) provides yet another aspect of the importance of archives. While this statement was made regarding archives in general it is also of relevance to long-term preservation of sound carriers.

Development of archives whose collections are based on audiovisual formats is directly attributable to technological developments that took place in the 19th century. In 1877, when Edison mastered the art of sound recording, it would be reasonable to suggest that no thought was given, either by Edison or others of his time, to how this invention would impact on the nature and scope of archival work. The ability to record sound for innumerable replays without change to the original sound text fundamentally changed the concept of information and information work. While the ability to record sound has been in existence for over 100 years, its history and value as an archival medium is considerably shorter.

Sound archives preserve and protect the sound heritage of their host nation and those who create intellectual property of an aural nature. Sound archives are important sources of social, cultural and historical information. Sound archives provide provenance of the intellectual property of either an aural text or creative expression. Sound archives reinforce national pride. Sound archives provide testimony to the creativity and intellectual capital of the community from which the aural text emanates.

Audiovisual archiving is a relatively new concept in many developing countries. It is useful to note, however, that even in some European countries national sound archives are of recent origin. For example, the Netherlands Audiovisual Archive (NAA) was established only in 1997. The difference, however, between developing and developed countries is that whereas in most developed countries there are a number of institutions that have performed the tasks of a national sound archive over time, in most developing countries there are either very few or no institutions that deem such tasks to be part of their remit. Therefore, whereas most developed countries have some coverage of their sound heritage, most developing countries do not.

Using the Caribbean as a guide, this paper will look at the situation of sound archiving in developing countries. It will conclude by recommending some strategies that could be considered for improving the state of sound archiving in countries categorized as developing.

Archiving in Developing Countries

Archival development in most developing countries is at best rudimentary. Regrettably, in many developing countries, including those in the Caribbean, archives are perceived as places housing collections of old, dusty materials that have little to do with real life. Neither the social importance of archives, nor the role that archives play in national building, is generally appreciated in the developing world.

In many developing countries archives are placed in obscure, inappropriate locations, forgotten by policy makers until budget time when the least possible level of funding is provided by the national purse. Many policy makers in developing countries do not see archives as being relevant and important to national needs and well-being. In terms of the national purse, many in such locales deem archives to be consumers and not contributors. In other words, veritable bottomless financial pits!

What is the Sound Heritage?

Given that sound archiving is of recent history in developing countries, an understanding of the scope of the sound heritage is important.

Edmondson (2001?) provides a working definition of the sound heritage - *patrimonio sonoro* - when he states that the sound heritage includes:

the output of the commercial sound recording industry... it includes radio programmes of all kinds... It also encompasses other sound documents such as oral history, recording of natural sounds (such as animals and insects), industrial sounds (such as the railway fraternity, which documents the sounds of steam locomotives), parliamentary proceedings, speeches at public events, ethnographic recordings documenting the language and music of culture now lost or disappearing, the sound tracks of films and television productions... (p.1-2).

Edmondson also advances that the sound heritage includes the technology required to access the information, as well as related documentation, artefacts and sound paraphernalia.

If a strict application of Edmondson's definition were to be exercised in Trinidad and Tobago for example, the birthplace of pan¹ Whereas in Trinidad and Tobago the instrument is called pan and a group of pan players a steelband

¹ Whereas in Trinidad and Tobago the instrument is called pan and a group of pan players a steelband in many other countries the terms steel pan and steel orchestra are used respectively.

in many other countries the terms steel pan and steel orchestra are used respectively. , one would expect to find a pan archive with a comprehensive collection of print, non-print and realia that concretizes the importance of pan to the culture of Trinidad and Tobago.

Unfortunately, no such archive exists. In fact many believe that pan is a Japanese invention, conceived by Japanese electronic engineers. This perception arises from the fact that pan registers are features of most modern models of Japanese electronic keyboards and synthesizers. The Japanese commodification of a Caribbean cultural icon, reinforced by the American resistance and reluctance to patent to Trinidad and Tobago the only musical instrument that was invented in the 20th century, has led to this false notion.

In 1989, **Sparrow** (Slinger Francisco) penned the calypso *Document Pan*, expressing his concern about the abject indifference that Trinidadian society displayed towards pan. *Document Pan* chides the apathy that many had, and some still have, towards preserving and protecting this most creative of cultural inventions, recycled technology and environmentally-friendly instrument². This calypso is replete with reasons why it is important to document the history of pan for future generations. Verse one is illustrative of **Sparrow's** concern and is as follows:

Document Pan (Verse 1)

Steelband man, historian, Mr. Politician

Tell me when yuh going to write de history of pan

You taking steelband for granted

Mistaking it will always be around

But when pan, how it all started

You make no mention, documentation cyaan³ be found

Try de NCC⁴ or de university

Tell me if you see, any steelband history for posterity

CHORUS x 2

If de steelband must grow, de children must know

De trials and tribulations of long ago

Although the situation has improved, the early history of pan and steelband still needs to form part of a comprehensive national audiovisual archive in Trinidad and Tobago.

Edmondson's definition indicates that the sound heritage is a wide field. It is also one that is constantly changing and increasing, given advances in technology, output of recorded sound, and a pressing need to capture the endangered and disappearing oral patrimony of many societies, especially

² Original pans were fashioned out of oil drums discarded by the U.S. forces when they had a garrison in Trinidad and Tobago during World War II.

³ A colloquial way of saying cannot in the Caribbean.

⁴ NCC - National Carnival Commission an umbrella body overseeing carnival celebrations in Trinidad and Tobago.

where there is not a strong history of archives.

Given the broad scope and responsibility of a sound archive, it is clear that such a mandate would be quite challenging for developing countries.

Why Sound Archives Are Important to Developing Countries

As a considerable portion of the heritage of developing countries occurs in intangible forms such as music, languages and other oral traditions, the printed word is an ineffective medium for collection and storage of non-tangible texts. Knowledge in many developing countries is not based on the European notion of literacy. The oral method of knowledge transfer and communication still predominates throughout this diaspora.

Hampaté Bâ's declaration that 'Africa loses a library when an old man dies' vividly describes the importance of the oral heritage in many developing countries (UNESCO, p.1). The griot, the old storyteller, was charged with the responsibility of being the memory of the community. As communities in developing countries expand, stories multiply. There is more for the griot to remember. Time, memory loss, personal interpretations and reinterpretations, as well as other factors, affect stories (community history and knowledge) as they are passed orally from generation to generation. Whereas these changes are themselves part of the nature of culture, reliance on oral channels of transfer denies successive generations opportunities to compare the past with the present. The reliance on oral transfer also denies future generations the ability to fully comprehend their past in order to understand or appreciate their present. And, of course, there is the insidious cultural penetration that silently, over time, becomes part of the face of the 'new' indigenous popular culture. These factors become causes of the loss of knowledge and/or negatively affect the accuracy of information and cultural norms.

A sound archive with proper collection techniques ensures that each generation of citizens in developing countries will have access to various editions and versions of their legacy. Long-term storage of oral information in media that are not prone to the vicissitudes of human nature must become the norm in developing countries.

For many developing countries, sound archiving is to their culture what the Gutenberg Press was to European culture and heritage in the 15th and later centuries. The printing press revolutionized knowledge and information transfer of European culture. Through the printed medium, European culture was preserved for future generations of Europeans. Printing enabled other cultures also to have first hand knowledge of European society and culture. Sound archives will enable the culture of developing countries to become universally accessible. Establishment of sound archives in developing countries will be as revolutionary a development, in terms of the *patrimonio sonoro* of

developing countries, as was print to European society and culture. Sound archives will help to place the culture of developing countries on par with that of other societies.

There are two other important aspects of the print/sound archiving debate. In many developing countries, the printing industry is not well developed. Printing costs are high. Purchasing printed documents is often beyond the reach of many in developing countries. Further, illiteracy remains endemic in many developing countries, thus the written word is not comprehended universally. On the other hand, unless one suffers from a hearing disability, one hears sounds, even if the decoding and internalization of that sound differs from listener to listener.

Many of the social practices, rituals, festive events, performing arts, natural and man-made sounds and other cultural expressions of developing countries are aurally based. The written word is unable adequately to capture, portray, represent or recreate intangible expressions. Sound recordings also bring to life real events. The need to develop sound archives therefore assumes added significance in developing countries. Non-preservation of the endangered sound heritage signals an ultimate loss of part of the world's intangible and oral heritage. With current trends of protecting cultural diversity and the richness of the world's heritage, loss of a single oral text represents a major loss for mankind.

UNESCO describes the importance of the intangible heritage as it is encompassed in sound thus:

For many populations (especially minority groups and indigenous populations), the intangible heritage is the vital source of an identity that is deeply rooted in history. The philosophy, values, moral code and ways of thinking transmitted by oral traditions, languages and the various forms taken by its culture constitute the foundation of a community's life. The essentially ephemeral nature of this intangible heritage makes it highly vulnerable. It is urgent to take action! (p.1).

It is this vulnerability that makes development of sound archives in developing countries even more pressing. Vulnerability of the oral history, and often the only history, of communities in developing countries should make preservation of this sound heritage a matter of national concern requiring immediate action. The need to protect and preserve the 'foundation of a community's life' makes development of sound archives in developing countries an imperative.

Some of the Factors that Militate Against Development of Sound Archives in Developing Countries

There are several factors that have had an impact on development of sound archives in developing countries. The most important ones will be examined.

Perceptions

There are several negative perceptions of archiving in developing countries. Many people do not view archives as important social, cultural and historical institutions. Few people comprehend the important contribution archives make to civil society, or the need to protect the endangered oral heritage for present and future generations.

At the policy making level, there is considerable lip service paid to the importance of archives in general and sound archiving in particular. In reality, archives do not stack up well against welfare issues such as installation of running water, erection of schools, or laying down of roads. Archives do not make a political statement. There is no immediate political leverage to be gained from archival development and/or expansion. Thus, successive governments and bureaucrats in many developing countries are often loath to spend money on information services in general and on archives in particular.

In developing countries there is also a limited understanding of the importance of sound as an archival resource and source. Historical supremacy of the book continues to subjugate the importance of other formats of information and communication, even in societies where illiteracy is widespread! Another deterrent to development of sound archives in developing countries is the strong association of sound with recreation and entertainment, even though many sounds are of a very serious nature. These are some of the factors that cause non-print carriers of information to be marginalized and seen as secondary to print-based sources and resources.

One of the negative effects of colonization has been an enduring perception (until recent independence movements, when national interest in indigenous culture assumed heightened proportions) that indigenous information was of lesser value compared with what originated in the metropole. This is the so-called 'big' vs 'small' tradition debate in cultural studies. Steps taken by the colonizing powers to stamp out indigenous (and incorrectly perceived 'lesser') cultural expressions were rife during colonial days in developing societies. In addition, many nationals of colonial countries, in their attempt to appear 'sophisticated', tended to devalue their own culture as they assumed a cloak of urbanization/Westernization. This marginalization of indigenous or non-European culture prevailed until after World War II. Interest in indigenous and national cultural expressions in developing countries is a post-independence phenomenon in many former colonies. The early 1960s is deemed to be the period that marks the beginning of the cultural renaissance that is evident across the developing world.

In the Caribbean, for example, during the early history of this region there were several attempts to stamp out the popular music of the region - the

calypso. It was not considered seemly for 'people of substance' to sing calypsos, or be seen visiting places where calypso was performed and enjoyed. Singing of calypsos was also banned on Sundays and during Lent. These steps demonstrate the lengths to which people went in their attempt to stamp out this form of popular culture.

To illustrate how times have changed, Crop Over⁵, Barbados's national festival, is driven by popular music, notably the calypso. This festival has fast become an important income generator for the island. In 1998, it was estimated that Crop Over, its associated activities and events, contributed over US\$30 million⁶ to the Barbadian economy. Diversification of the tourism product of Barbados to include cultural tourism, including that based mainly on music, indicates how critical culture has become to the GNP of Barbados. An important aspect of developing the cultural tourism product of the island must of necessity be the presence of a sound archive that would serve as an important resource base for this industry.

The need to have a sound archive in Barbados became patent during the Calypso Monarch Competition⁷ of 2003. The rules for this competition state quite clearly that contestants must render original work. Unfortunately, in 2003, a competitor in good faith purchased and performed a song that took him as far as the semi-final round of the competition. At that stage someone mentioned that the song had been sung about 15 years before. After frenzied investigation and polling of memories of calypso aficionados, it was realised that the allegation had merit in that whereas it had been sung before, it had never been adjudicated. The incident marred the competition. The competitor withdrew. Of course, there was wide national debate about this contretemps. It is my contention that had there been a national sound archive, the matter would have been arrested very early in the competition. This would have avoided the considerable embarrassment that was associated with the matter.

Associated with the perception issue is the assumption that non-digitised sound documents have no value. Administrators who do appreciate the archival value of a range of formats, dismantle collections of vinyl and tape recordings in their attempt to go digital. On one Caribbean island, the vinyl and tape formats of this island's oldest sound library, belonging to a private radio station, were dumped when the decision to digitise the station was made. No thought was given to the unique historical, social or cultural value of a collection of original recordings spanning some 40 years. Many of the in-house recordings would have been done during the period that spanned the end of colonization and attainment of independence.

⁵ While carnivalesque in scope, Crop Over is a summer festival that celebrates the end of the sugarcane harvest. It is held during July, culminating on the first Monday in August.

⁶ The fixed exchange rate is Bds\$1.00 = US.50¢. To help put the economic importance of Crop Over in perspective, Barbados has a population of 270,000 and covers an area of 166 sq. miles.

⁷ Every year as part of the Crop Over festival there is a Calypso Monarch Competition. Participants are required to sing two original compositions in a three-tiered competition. The purse for the winner is no less than US\$40,000. It is a highly competitive event and one that attracts considerable national attention.

These recordings were primary research data of a singular era in the island's history. Paradoxically, the station has been trying to reconstruct its collection by copying into its computers some of the available commercially recorded vintage recordings that were discarded previously. Unfortunately, many of the original recordings have been lost forever.

Financial Issues

Expansion of archival collections to include sound has budgetary implications that are often beyond the current financial ability of archives in developing countries. Most archives in developing countries are hard pressed to function as currently constituted. Therefore, expansion of collections to include sound carriers that have very specific requirements, although desirable, is beyond the financial resources of these institutions.

The financial needs of sound carriers are not confined to the cost of either the software or hardware. Indeed, the lack of financial resources underpins most of the challenges associated with sound archiving in developing countries, and encompasses personnel – including training, accommodation, technical support – hardware and software, and the need to remain technologically current.

Personnel Issues

Ensuring that there are staff trained in sound archival management also has cost implications. Management of sound requires expertise and skills in diverse areas. If these skills and expertise are not already resident in the staff complement, they have to be acquired. In addition to archivists, sound carriers require technicians with the expertise to ensure proper functioning of equipment and stability of the storage medium. Sound carriers have to be used and/or cleaned at regular intervals to maintain their condition. In cases where migration has to be done, staff with the expertise to migrate data from one format to another are also required.

Organisation of a sound archive is also costly. Ability to catalogue sound materials is not a skill that is readily available in the Caribbean at this time. Acquiring these skills may include hiring an expatriate, or mounting training courses. These have cost implications. The task of cataloguing non-print materials is also much more time consuming than print-based information. AMIA (Association of Moving Image Archivists) estimates that it takes 10 hours to catalogue a film!

Providing ongoing training is another aspect of the financial considerations associated with sound archiving. As technology changes, and new methods of sound archiving become available, it is critical that those responsible for efficient functioning of the sound archive are exposed to the relevant training.

Personnel issues have another component: unfortunately, some of those who work in archives in developing countries suffer from technophobia.

Consequently, not all the members of the cadre of existing staff are able or inclined to work with sound-based data. Thus, recruitment of competent staff who are comfortable with the technological requirements of sound archiving is another aspect of personnel issues relating to preservation of the *patrimonio sonoro* of developing countries.

Infrastructural Issues

Many archives in developing countries are not located in physical facilities that are appropriate for long-term preservation of archival resources. Sound carriers have specific physical requirements that usually mean construction of purpose-built facilities. There are few archives in the developing world that are spatially or physically appropriate to the housing needs of sound carriers.

In tropical locations such as the Caribbean, in addition to heat, humidity and atmospheric salt control are constant challenges. The vinegar syndrome finds the Caribbean a most hospitable environment!

Conversely, in arid locations, maintaining the correct humidity balance and a particle-free environment are challenges. Thus, the physical requirements of sound carriers have consequential cost implications that are higher than those associated with print-based resources.

Technological Issues

Reference to some of the technological issues has already been made. There are others. Developing countries are characteristically dependent on developed countries for technological expertise, hardware and software. Developed countries are always improving their technological capacities and capabilities through development of new generations and/or totally new platforms. Financial ability of many Western institutions is such that they are able to operate at the cutting edge of technology.

On the other hand, archives in developing countries are often hard pressed to upgrade from one technology to another. Consequently, in terms of their technological capabilities and capacities, many archives in developing countries often find themselves operating with technology that is several generations behind that in metropolitan centres. Getting spare parts for existing machines, many of which are no longer on the market, is an ongoing challenge.

Analogue systems and a tape environment are still the norm in many developing countries. This compares starkly with most developed countries that have gone through several generations of digital platforms in several media formats. Thus, there is a disconnect between the technological realities of sound archiving in developed compared with developing countries. The digital divide is also a reality in sound archiving.

As many developing countries have regional networks that seek to link related organisations, one of the technological issues that has to be addressed

is that of compatibility. In the Caribbean, information exchanges are encouraged. If Caribbean institutions are to collaborate, on-island and intra-regional technological compatibility must become a reality.

Collection Development

Many developing countries have not enacted the legal instruments that make it mandatory for archives to extend their collection policies to include non-print resources, including sound. Whereas many developing countries include statements in their mission statements that suggest they will collect non-print materials, the policy is not specified. Without an explicit policy, it becomes easy for all the parties involved not to include non-print materials in their collections.

Collection development is aided in some countries, however. In Barbados, Statutory Instrument (S.I.) 88 of 1992, which sets out the Legal Deposit regulations for Barbados, lists the (National) Archives Department as one of the legal deposit recipient institutions for Barbadian publications. This S.I. is governed by the Copyright Act of 1998, which specifies what constitutes a publication for the purposes of this Act and the S.I.s that it governs. Under this Act, sound recordings are listed as 'publications'. Unfortunately, for spatial, personnel, technological and other reasons there is non-compliance on the part of both the Department and the producers (publishers). Institutional reasons touted are no staff, insufficient funds, not enough space, and lack of expertise for not expanding the base of their collection to include sound carriers. On the part of the producers, non-compliance is owing primarily to ignorance of the legal requirements. The Barbadian situation of non-compliance is not unique in developing nations.

Jamaica's Legal Deposit Act of 2002 is an exemplar in this area. It makes provision for the deposit of sound recordings with the National Library of Jamaica. The Jamaican Act could be used as a model for Legal Deposit legislation for other developing countries.

In many islands of the Caribbean there are several diffused, but important, collections of sound resources. The institutions that have these materials recognise their importance but are ill-prepared and unequipped to handle long-term preservation and protection of these materials. In St. Vincent, for example, what is now the National Broadcasting Corporation (NBC) inherited a large number of tapes from several sound producing entities in the Anglophone Windward Islands⁸.

The NBC has one of the best collections of oral documents in the sub-region, dating back some 40 years. They contain seminal research information on a range of national and regional issues with the NBC having, in some

⁸ The Windward Islands is a southern archipelago sub-region in the Lesser Antilles of the Caribbean. The Anglophone Windward Islands are Dominica; Grenada, Carriacou and Petit Martinique; St. Lucia; and, St. Vincent and the Grenadines. The French Overseas Dependency of Martinique is also a part of the Windward Islands sub-region.

cases, the only known copy of a particular recording. Unfortunately, these resources are not currently managed or organised according to norms that meet international standards of sound archiving. Attempts are being made to redress this situation. In the meantime, the collection is vulnerable to pilferage and damage owing to the absence of appropriate archival management and techniques.

An aspect of collection development that is unique to developing countries centres on the history of many of these nations. Many countries that are categorised as developing were, for some part of their history, colonies. This had two negative effects: firstly, a devaluation of indigenous culture to which reference has already been made; secondly, a considerable portion of early records of the colonized territory was taken away and placed in metropolitan repositories. Thus, much of the (early) national heritage of developing countries resides in expatriate locations. This is a political issue with economic overtones that needs to be settled in favour of the former colonies, with no financial liability attached to repatriating the culture that was filched.

Professional Networks

A professional body that is able to advocate on behalf of the need to develop and maintain sound archives in developing countries is an imperative. Examination of what occurs in developed countries indicates that professional bodies are able to lobby and advance the cause of protecting their *patrimonio sonoro*. This needs to happen in developing countries.

CARBICA (the Caribbean Archives Association that is affiliated to the International Council on Archives [ICA]) serves as the umbrella association for archivists in the Caribbean. Unfortunately, given the challenges associated with print-based long-term preservation, this association has not been able to devote the level of attention needed to protect the non-print heritage of the region, either collectively or nationally. It is pleasing to note that CARBICA will hold two workshops on archiving audiovisual formats during November 2003.

Another group in the Caribbean, however, has the potential to advocate the institution and development of strong audiovisual archiving practices in the region. This is the neophyte organisation AVIN (Audiovisual Network), operating only in Jamaica at present. AVIN's membership includes persons who have garnered a diversity of the professional skills needed to work with audiovisual materials. A number of Jamaican archivists belong to AVIN.

Extending the mandate of AVIN to become a regional body is one of the issues that will be discussed at the inaugural conference on archiving audiovisual materials in the Caribbean, CAVIC 2003. Meeting under the theme: *Our National Heritage and History* (CAVIC 2003), it will be held in

Kingston, Jamaica in November 2003. Positive regional networking is one of the outcomes expected from this conference.

At some point there has to develop in the Caribbean a relationship between the professional associations and practitioners who are involved in creation, protection, preservation and dissemination of the audiovisual heritage of the Caribbean.

Other Experiences

East and Southern Africa

Although this paper is weighted heavily on the side of the Caribbean experience, Matangira (2003) indicates that several of these issues are also realities in the practice of sound archiving in East and Southern Africa. Matangira's comments are based on the findings of an ESARBICA survey. (ESARBICA is an affiliate of the ICA.) This survey was conducted in response to one of the recommendations made at an ESARBICA workshop on audiovisual archiving. Matangira states that archives in the ESARBICA region are '*faced with the usual financial and human inadequacies [consequently] these archival institutions have been struggling...*' (p.31) in terms of meeting the needs of their paper-based archives. Referring specifically to audiovisual archiving, she states that the region under review

'still has a long way to go for it [audiovisual archiving] to be properly defined ... It is only in recent years that most of the archival institutions in the region have begun thinking more seriously about audiovisual archives. Many institutions, and indeed the whole world, are increasingly appreciating that vital information is also found in the audiovisual medium, not just paper documents, and there is more awareness of the need to preserve this medium of information... Archives, of late, have been encouraged to play their part in ensuring that all these new forms of information are captured and preserved' (p.32).

Continuing, she states that:

'most of the archival institutions in the ESARBICA region are still struggling to develop [their] audiovisual collections. It must be appreciated that audiovisual records are much more complex and expensive to handle, preserve and provide access to in comparison with paper archives. Audiovisual archiving requires more technical skills and equipment, which is not good news to the overstretched budgets of the Third World' (p.32).

Whereas ESARBICA serves the needs of archiving in general, one of the needs that were articulated was creation of a regional body for East and Southern Africa that would focus on audiovisual archiving in this region. Matangira states that '*a regional body will help very much to shape the process of audiovisual archiving in Africa through the exchange of ideas and sharing of similar problems and subsequently, solutions'* (p.37).

South East Asia-Pacific

In an examination of the situation in South East Asia-Pacific, Edmondson summarised the problems associated with sound archiving in this part of the developing world as: economics; impact of tropical conditions that adversely affect sound documents, the effect of which is exacerbated by inappropriate accommodation; maintaining technological currency; and training.

SEAPAVAA (the South East Asia Pacific Audiovisual Archive Association), established in 1996, serves the audiovisual archiving interests of the South East Asia-Pacific region. Although relatively young, this association has been quite active. SEAPAVAA has held a number of conferences; it has a bulletin, *AV Archives Bulletin*; it is involved in a range of supportive professional activities; and it has a web presence

<http://www.geocities.com/Hollywood/Academy/9772/>

SEAPAVAA is also one of the institutions that associated with ASEAN-COCI (Committee on Culture and Information) to run the Film/Video Preservation Through Distance Education programme. The South East Asia-Pacific region is clearly ahead of the Caribbean as well as the East and Southern African regions in terms of developing professional partnerships. What SEAPAVAA has been able to accomplish demonstrates what is possible through collaboration. Whereas Matangira's and Edmondson's examinations relate to audiovisual archiving in general, the issues they cite are applicable to sound archiving in particular.

Although the Caribbean, East and Southern Africa, and the South East Asia-Pacific are geographically distant, they are all classified as developing regions. This paper has demonstrated that there are a number of common challenges and issues in these three regions in terms of protecting their sound heritage.

A Role for IASA?

It is indisputable that IASA is the premier international association involved in archiving sound. Resident in its membership is perhaps the largest international pool of expertise in sound archiving to be found in any association. Given the situation in developing countries and IASA's resources, a reasonable question must be:

Does IASA have a role in helping developing countries to improve their sound archiving activities?

I believe the answer must be a resounding, yes.

Having answered in the affirmative, the next question has to be: What is this role?

There are several possibilities - a few will be explored.

Professional Mentorship: If each IASA member were to 'adopt' a colleague from the developing world, this would facilitate knowledge transfer at an intimate and personal level. One-to-one links develop a level of confidence in the learner that an open forum does not always facilitate. This mentorship, however, has eventually to make the mentee able to operate independently and with confidence in the full knowledge that, should the need arise, there is support available. The question may well be asked: what does the mentor get out of this arrangement? For one, they would be likely to get new members for IASA. Secondly, the institution and the mentor are able to say that they have made a personal contribution to the concept of globalization and all that is imbedded in this concept. Thirdly, opportunities for personal consultancies could also ensue.

Extending IASA's Membership Base: I strongly believe that IASA has to court institutions and professionals in developing countries to become members of its association. At present, the developing world is underrepresented in IASA's membership. Although IASA has been around for quite a while and has strong links with Western institutions and individuals, little is known about IASA's activities in the developing world. A serious public relations programme linked to the needs and realities of developing countries would not only improve sound archiving in such places, but would also strengthen the membership base of IASA.

Many may say that IASA has a web presence. A web presence is only as good as those who know about you, or who have access to the Internet. In reality, the Internet is a Western device with limited penetration beyond the shores of the Atlantic Ocean, Western Europe, and certain countries in the Pacific Rim. There are more people in the world who are not connected than those who are. IASA has to expand its non-digitised forms of communication in order to extend its influence.

Continuing Education: Hosting an IASA conference in one or more developing countries, with sessions geared specifically to the needs of the developing world, would be another positive step in this direction. The agenda of such events and topics covered must, of necessity, be of a different order from the 'business as usual' format. Conferences are one of the best ways of providing continuing education for a large number of people at a modest cost. Tied into this, however, must be an intent on the part of IASA to strengthen the capacity of the south as it seeks to archive its audiovisual heritage. The fostering of south-south links in the field is important, and vital, if sound archiving is to flourish in the developing world. Such links help to develop capacity in areas that have similar history, interest, needs and views.

Formal Training: And finally, the need for formal training needs to be addressed. If IASA could sponsor even a modified version of the ASEAN-COCI course,

making it available to all the interested parties in the developing world at a reasonable cost, IASA would have contributed significantly to improvement of the long-term preservation of *patrimonio sonoro* of the developing world.

The Future

The thesis of this paper is whether sound archiving is a luxury or a necessity in developing countries. The paper has detailed a number of the reasons for the sound heritage of such regions to be archived. It has unconditionally demonstrated that sound archives are necessities and not luxuries for any country, including those in the developing world.

The paper has also highlighted a number of challenges in terms of archiving the *patrimonio sonoro* of the developing world. Challenges, however, have a positive side: they offer opportunities to develop solutions.

Strategies for the Way Forward

The following are some of the strategies that could be effected to improve long-term preservation and protection of the sound heritage of developing nations. Some of the most important ones are:

1. Development of national policies with supporting infrastructures:
Such policies, including appropriate legislation, would give archivists who have the responsibility of protecting and preserving the sound heritage the necessary mandate to support development and maintenance of a national sound archive.

Once created, professionals who are obliged to give effect to these policies would have a moral responsibility to ensure that the requirements of the policies are respected.

2. Continuing education: In order to develop the range of skills needed to effect proper sound archiving, a range of continuing education activities have to be planned. These would involve conferences, seminars, attachments, and consultancies. Persons benefiting from such programmes would involve not only archivists, but all who are stakeholders in archiving the sound heritage.

For example, in many developing countries labelling of most of the commercially produced sound carriers does not conform to international standards. Those involved in production and distribution processes need to be sensitised to the requirements of the trade, so as to ensure that their products meet the labelling requirements for musical products. Such a training programme could be done as a public service by a national sound archive or other body involved in the sound heritage at a national level.

3. Networks: It is important that those responsible for archiving the sound heritage of developing countries develop networks. These

networks need to be created at national, regional and international levels. They should include not only archivists, but all those who have a stake in preserving and protecting the sound heritage.

South-south networks are particularly important, as experiences in the west, while useful, do not always articulate the realities of other areas and regions. In addition, Western experiences do not always mirror or match the needs or skills that are relevant to developing countries.

4. Public education: There is a need to develop a series of educational programmes in order to sensitize the public to the role and importance of sound archiving to national heritage. Development of such programmes must be done by those professionals who will ultimately have responsibility for managing such collections.

Preceding external public education programmes, a series of intra-institutional activities needs to be initiated to expose professionals to the concepts of sound archiving. Those who have an understanding of the importance of sound archives in developing countries have a cardinal responsibility to be the mentors in this regard.

5. Collection Development: If the haemorrhage of culture from developing countries is to be caulked, those with the responsibility of protecting and preserving the heritage of developing countries have to develop the foresight to recognise or anticipate what is important culturally. Collection development must not be clouded by one's socialization or other personal traits, as these have a negative impact on collection development. For example, Bob Marley's was fully embraced in Jamaica only after he achieved international acclaim. This has caused there to be more Bob Marley archives outside Jamaica than there are on the island.

The ability to recognise and anticipate what will become important is a skill that can be developed only over the long term. It has to be based on personal knowledge and experience, linkage with others who have a stake in the cultural patrimony of a nation, and an understanding of international trends in the field.

6. Documentation: In developing countries the practice of documenting national issues, including cultural ones, is not well developed. Nor is there in-country proactivity about husbanding the culture of such communities. The culture of documenting intangible expressions has to become a core responsibility of professionals charged with protecting and preserving the *patrimonio sonoro*. Expertise on the sound heritage of developing countries has to become resident in developing countries and not domiciled in expatriate locations with non-nationals.

This must include development of a literature base on the multiplicity of issues associated with protection and preservation of the sound heritage of developing countries.

7. Repatriation of purloined culture: At the international level, several rounds of negotiations have to be conducted to facilitate the return of cultural expressions, treasures and icons that were transported to metropolitan locations, especially during the days of colonialization. This is as important as current international conventions that address repatriation of cultural artefacts removed during wars.
8. IASA's Contribution: IASA has a cardinal responsibility to assist developing countries to ensure proper collection, protection and preservation of their cultural heritage as manifested in audiovisual formats. Mentoring, continuing education, expanding IASA's geographical footprint, and formal training have already been identified as some areas in which the association could profitably expend its energies. There will be many others based on regional and individual needs.

This list, though partial, may appear daunting. But, whenever one is engaged in pioneering work, this is the reality. Without accepting these challenges, those responsible for protection of the sound heritage of developing countries will not be able to say, with pride, they have ensured that future generations will be able to connect with their past. If those currently charged with preserving and protecting the audiovisual heritage are derelict in their duty, they will deny future generations opportunities to develop a sense of self-esteem and self-worth based on the grounded knowledge of their past and from whence they came.

In closing as our host country, South Africa, prepares to celebrate its Heritage Day later this week (September 24th), Balindelela (1999), during a presentation on the African Renaissance, which must include archiving the sound heritage, said that the Renaissance:

'provides a tool for balancing the scales, for rediscovering neglected or marginalised sites associated with our heritage, for removing the imbalances of the past, for reinterpreting our history, for rediscovering African achievements and values, for restoring pride and dignity in our people, for recapturing neglected traditions of our culture like music, stories and dance, for shaping an identity that takes us forward to the kind of society we would like to create in South Africa.'

Balindelela's words strengthen the need to have sound archives in developing countries. Her pronouncement on the African Renaissance unequivocally underscores the point that sound archives are not luxuries for developing countries, but necessities of a fundamental nature.

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Audiovisual Archives And Igbo Cultural Heritage

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Abstract

Archiving of cultural heritage and historical facts is not new to the Igbo people of Nigeria. The Igbo place emphasis on documentation and preservation of cultural heritage and communal historical events for purposes of informing the coming generations. The intention is not only to share experiences but also to enable the younger generations to learn from the mistakes of the past. The Igbo formulated subtle ways of archiving historical materials. Two major systems have been generally used. These are the audio and visual systems of archiving. Although from a broader perspective these are also used by other cultures of the world, the idiosyncrasy of their use by the Igbo is worth noting.

This paper will attempt to highlight and discuss audio and visual archiving by the Igbo society from a musical perspective, and provide sample materials (musical transcriptions and still photos) for clearer understanding of the subject of discussion. It will also discuss the role of audiovisual archives in preservation of the Igbo cultural heritage and collective memories, and present some suggestions for a resourceful exploration of Igbo audiovisual archives by researchers.

Introduction

*Taa bu gboo (Today is the past),
Onye amaro ebe mmiri bidoro maba ya, ogaghi ama ebe onoro kwusi ima ya
(One that does not know where the rain started beating him will not know where it stopped beating him).*

These two Igbo philosophical sayings demonstrate knowledge of, and belief in, the past by the Igbo. The first saying encapsulates Igbo belief and conviction that today's events and experiences constitute the past. The belief is that there will not be the past without the present. Events of today constitute historical data we know as the past. In the Igbo world view, therefore, the past is strongly linked with the present. The second saying demonstrates Igbo belief in the past as a factor that influences and shapes the present. Significant in the saying is that knowledge of the present would be incomplete without knowledge of the past. To the Igbo, the present does not emanate from a vacuum. The past is therefore, a contributing factor in transactions of the present. In the Igbo cultural milieu, for instance, the worthy dead (known as ancestors) are believed to be immanent and very active in the affairs of the living. They are venerated and called upon in times of strong decision making. The worthy dead are not viewed as dead and gone. Rather they are considered to have passed on to the ancestral world from where they communicate with the living from time to time through priests; oversee

their activities, contribute to their daily affairs, punish deliberate ignoble acts and reward noble acts of the people. Annual festivals are held to cleanse the land of the evils of the passing year on the eve of the new year (*Aro ofuu*), otherwise they would be carried over to the new year. The Igbo believe this has dire consequences for the land/people. The Igbo celebrate the role of the past in the present of the living. The Igbo are therefore, unequivocal about the interface of the past and the present.

The Igbo word for the past is *Gboo*, and yesterday is *Unyahu*. *Mgbe lka* and *Akaa* are Igbo words for ancient times and last year respectively, and *Mgbaka* is the word for prehistoric time.

Discussing these is necessary to establish that the past is entrenched in the Igbo world view. The Igbo draw extensively from the past, as well as adequately preserving cum archiving of the past in order to inform and direct the present and the future. It is deducible from the philosophical sayings that the Igbo intend present and future generations to be aware of where they are and how they got there. Thus a passing generation hands over to the next as much data as can be archived in different forms. Archiving of cultural and historic facts by the Igbo hinges on this belief.

The Igbo have developed forms of cultural and historical archiving that ensure documentation/preservation, retrieval and use of necessary information. This paper will explore these forms with a view to communicating how the Igbo apply them.

While our discourse draws from available literature on the subject, I will draw more from indigenous knowledge resources to ensure that data from the cultural source are projected more. Having been an active culture bearer from the area for more than thirty-five years, my experiences shall also be resourcefully explored in the discussions.

The Igbo are one of the major tribes in Nigeria. Igbo land is found in the south-eastern part of the country where the people conduct their affairs as subsistent farmers, businessmen, civil servants, artisans, academics and students. Although Igbo culture has been eroded by Western cultural practices, our discussions shall focus on observable cultural practices in the Igbo traditional contexts as they concern the subject of this study.

The remaining part of the discussion is divided into two broad sections. The first focuses on musical (audio) archiving of cultural and historical facts by the Igbo; the second discusses visual archiving of cultural and historical facts. Musical materials presented in the paper are not given musicological analysis. A broad survey of music as an instrument for archiving in Africa as well as in Igbo land is made *ab initio*, to provide the background for the discussion.

Audio (Musical) Archiving of Cultural and Historical Facts

Several writers on African music have taken note of the role of music as a means of archiving cultural and historical facts. The observation has not changed much in recent times. Alan Merriam (1959: 52-53) observes that songs were and are the primary carriers of history among the illiterate folk in Dahomey. He gave a vivid example in which, by means of musical archiving, they are able to recollect the sequence of important names in their history. Those who visited the kingdom in the days of its autonomy remarked on the role of the singer as the 'keeper of records'. According to him, Waterman and Bascom note that songs referring to battles of the 18th century are still current in Nigeria, while the Tutsi of Ruanda still sing their resentment of a government edict that forced them to sell cattle at a price they consider unfair.

In another presentation Nketia, quoting Camara Laye, provides an example that demonstrates the role of music in historical archiving in the Manlinke tribe (1974: 28). In this example, the praise singer recalls the lofty deeds of the goldsmith's ancestors by means of songs accompanied by the Cora, a harp lute. Nketia also discusses historical songs as a typology. He says such songs remind people of the past and of the values of the society, and require some knowledge of oral tradition to understand them.

They have been described as historical songs in the literature on African music, even though, with a few exceptions, what they generally provide is not a detailed narration of events, but brief allusions to significant incidents and genealogies. (Ibid:197)

Although historical songs may be found in other contexts, they find the highest expression at the courts of chiefs, where they help to document the chronicles and genealogies of past rulers. Examples of such historical songs are the dynastic songs of Ruanda; the Mvet epics of the Fang of Cameroon and Gabon as well as the Gun of Dahomey (Ibid). In Dagomba of Ghana, historical chants are usually performed by players of the one-stringed fiddle, or by the leader of the lunsu hourglass drummers (Ibid:198). Beyond the courts of chiefs, songs embodying historical allusions are found in other ceremonial contexts, such as in the funeral dirges called Ubego in the southern Igbo tribe in Nigeria, in the Ijala chants of the Yoruba tribe in Nigeria, or in lullabies. Songs that draw on the kind of themes discussed above serve as depositories of information on African societies and their way of life, as records of their histories, beliefs, and values (Ibid:204).

In another study, Akpabot identifies fourteen categories of song texts. One of these is the historical song text (1986:94). Such texts carry historical facts of the people. According to him, song texts sometimes carry references to the valour and legendary powers of past heroes and ancestral gods (96). In addition to the historical songs, Akpabot goes on to discuss song texts as cultural indicators (97-98). He provides lucid instances in which cultural

beliefs as well as moral life of the people are embedded in their musical fabric. Nzewi also affirms the role of songs, poetry and archaic musical arts theatre as repositories of historical records in African cultures (2003:18).

Documentation/archiving of historical and collective memories is not limited to, nor found only in, traditional settings. In contemporary societies, music serves the same purpose in some instances. Quite often presentations of popular music mirror the society. Past events as well as current affairs in different societies have been found in popular music texts. In this way, popular music texts document happenings in the society (Onyeji 2003:63), thereby serving as audio archives.

The discussion so far demonstrates knowledge and deliberate use of music to document and archive historical and collective experiences/cultural facts in Africa in general. In all these instances music could be likened to the role of semen in the preservation and storage of sperm. In this analogy, semen provides the liquid base that preserves and sustains sperms until they are needed. In the same manner, the songs (tunes) serve as a sonic base for the storage of information contained in song texts until they are needed for presentation. While the text (poetry) is most valuable in such songs, the music nevertheless provides a creative and aesthetic base for their preservation, recall and presentation. Both would, however, be closely knit to be able to convey a message in a manner that is aesthetically appropriate on a given occasion. While the song texts provide the significant changes in thought, mood, or feeling, the music defines or expresses the general character of the occasion, or the spirit of the performance (Nketia 1974:205).

Although there is an enormous amount of literature on musical instruments in Africa, very little has been said about the role of musical instruments as historical materials/objects. Whereas this paper will not present a detailed study of this, it will provide some examples that would be relevant to further exploration.

Musical instruments are set aside in some African societies as ritual objects, historical materials and royal objects. Among the Ankole of Uganda, an instrument called the *bagyendanwa* is a mythical symbol of office with a special cult built around it, and the Lovedu of the Transvaal in South Africa have sacred drums, the smallest of which is mystically linked with the life of the queen mother. The *tabale* drum and *ngoni* harp are mythical symbols of the Bambara ancestral pantheon (Nketia 1974 :43-44), and the *ufie* or *ikoro* (see **plate 1**) and these drums are royal, ritual and mystical symbols among the Igbo. Among the Hausa of Nigeria, the *kakaki* is a royal instrument that announces movement of the emir. The Ikoro Umunze (see **plate 2**) is an example of a communal musical instrument that possesses royal as well as ritual essence. (It is a very old instrument that was constructed in the 19th century by the community. It is 455cms in length; 373cms in height; 345cms in width. The Umunze community commissioned a great master carver from another community to make the large ikoro for them.

The intention was to have an instrument that no other community has ever had, nor will ever have. The instrument was to be dedicated for ritual and musical use by the community. The carver laboured on the instrument for weeks and completed it. He was well fed and paid. When he finished and left for his home town, the Umunze people thought among themselves that if they did not do something fast the carver would tell other communities about the ikoro and may be contracted to make it for them. They sent strong men after him with instructions to kill him. They went after him and killed him on his way home. This was concealed. Today the instrument is a sacred object revered by the community. It is also seen as an archive of ritual and historical data such as on the story of the carver. It is at the centre of Eke Umunze, the Umunze community market, still today).

In these instances musical instruments carry some data that are historically informative in the societies. Cultural facts establishing the use of such instruments as mystical, ritual or royal objects could be retrieved on close enquiry from the oral tradition. Although the instruments are primarily visual archives of cultural data, they also perform musical archiving as sound generators. Beyond vibrations, these musical instruments carry historical, ritual and mystical data that form integral parts of their origin, consecration and use in the communities. Unless we uncover these data archived in the esteemed status of these instruments, we will not appreciate their full value in the communities. Such data await further research studies for documentation.

Audio (Musical) Archiving of Historical and Cultural Facts Among the Igbo

Audio (musical) archiving among the Igbo is distinguishable into two forms: the historical and cultural archiving. Whereas historical archiving comprises attempts by the Igbo to document cum preserve occurrences and happenings in their society in the lyrics of songs and drum texts of instrumental music, cultural archiving is documentation in sounds of cultural, moral and social values of the Igbo. Uzoigwe's study of Ukom among the Ngwa Igbo gives an account of archiving of historical data in drum texts in the music type (1998:78). Historical archiving specifically documents events of collective interest in a society while not ignoring happenings that concern individuals. Since Igbo society experiences enormous happenings daily, such documentation/archiving does not attempt a detailed presentation of events. Instead, snippets of stories are archived as reminders of full stories. Since it could be cumbersome to compose songs that present the full length of stories, summaries of them are often resorted to in musical structures that can be performed. As in the use of musical instruments as speech surrogates in Africa, in which the instruments do not use vocal texts but drum mnemonics that code certain messages understood by cognitive members of that society, musical archiving among the Igbo concerns itself with such allusions and summaries that immediately call up memories of events in those who experienced them. These are then communicated in full to interested

members of the society. Also, in keeping with Igbo principle of maintaining aesthetic appeal in creative works, most musical archiving is viewed primarily as creative/aesthetic works that communicate serious issues in a most subtle manner. For this reason, allusions are used more than direct storytelling to call attention to the facts. Nzewi observes this basic creative principle thus:

...no matter whatever function it commits itself folk music almost always retains its very basic essence as an entertainer. (1980:14)

Like most folk songs, it is uncertain who originates some of them. This calls to mind Adascalitei's notion of collective creation of folklore by the entire people (1971:72). Sometimes, however, traditional ensembles originate the songs and from the first performance they become well known in the communities. In some instances in contemporary Igbo societies, pop musicians compose new songs using events of collective interest as themes.

Such events and occurrences as the presence of missionaries, colonialism, war, epidemics, earthquakes, eclipses, slavery, cold-blooded murder, political matters etc have appeared/archived in songs in Igbo land. Memories/stories of some of these historical occurrences have survived until today through musical archiving. Although some of these songs and the stories inherent in them are now extant as a result of the ephemeral nature of music, and of modernization with its new forms of archiving, some of them are still sung in contemporary times with corresponding historical connotations/significance. Some of those songs are *Onye sub'achara*, *Echi azo ala*, *Ndi amuma ugha* and *Gbam gbam kolo d'*. Two songs are presented in this article.

Example 1: *Ndi Amuma Ugha (False Prophets)*, alludes to the coming of Christianity to Igbo land. It documents historical (religious) occurrences in the songs of a traditional musical ensemble, Abigbo choral-dance music in Mbaise Igbo. The song is a satire that alludes to the coming of Christian missionaries/religion, and the activities of the different Christian denominations in Igbo land. Of particular interest is the view of the musicians that God was known and worshipped in Igbo land before the Christians came with their own God.

Anyi nweru Chileke n'ishimbu ni (We have God right from the start)
(line 8).

The song documents/archives the Roman Catholic and Church Missionary Society (CMS) as the first missionaries/churches to arrive in Igbo land.

Ewetele Semensi a-nyi ekpewele ni (They brought CMS and we started worshipping); *Ewetele Katoliki any'ekpeweleni* (They brought Catholic and we started worshipping) (lines 14 and 16).

The text cautions people to beware of false prophets. It draws attention to the hypocritical activities of Christians and the conflict between Christian churches and traditional religion. The song also mocks the conflict among Christian denominations resulting from the scramble for membership. Abigbo musicians satirize the contradictions of modern religions, and point to the genesis of it all. Although the song is still performed today, its origin dates back to the missionary period in Igbo land.

Cultural archiving among the Igbo deals specifically with documentation and preservation of aspects of Igbo cultural heritage. The essence is to ensure retention of Igbo identity in the coming generations, and a society with a moral conscience. Before contact with modern civilization, the Igbo esteemed morality and good social personality. These permeate every aspect of Igbo culture. The need for preserving these and other cultural values/practices of the people for future generations prompted their archiving in music. There is an abundance of types of music that ensure cultural education of the young and project moral values in society. Such songs that are concerned with cultural preservation cum transfer are regarded as sonic cultural archives in this discussion. Whereas the medium of its expression is the same as that discussed above in historical archiving (music), the content is not confined to daily occurrences. Instead, it takes care of those relatively permanent observable features of the way of life of the people. Such matters as polygamy and its consequences; community ownership of the child; respect for elders; good behaviour by children; loving your neighbour as yourself; maintenance of law and upholding of justice; proper upbringing of children, all are archived in folk songs and in ensemble types of music. As in historical archiving, allusions are often used although direct references are used in some instances. One musical example is presented here to demonstrate this form of archiving.

Example 2: *O nwa mmuo Kam koro gi*

<i>O nwa mmuo ka mkoro gi</i>	<i>Inine</i>
Oh the spirit let me tell you	Untranslatable response
<i>Nwunye dim di njo</i>	
My co-wife is evil	
<i>Ngara kuru mmiri nenyè nwa</i>	
I took her water to give my child	
<i>Osimu kwuo y'ugwo mmiri, mmiri nwa</i>	
She said I should pay her for her water, water for the child	
<i>Msi y'echu m'ogba asi me chun'ogba</i>	
I told her I will collect water from Ogba river for her but she refused	
 <i>Kama gini</i>	
But what?	

Eze Ogba

The king of the rivers

Miri selu wam wam la n'eluigwe

The river that storms to the sky

Miri selu wam wam k'onwa n'eti

The river that storms when the moon is up

E-wo, nne nwa ndo

Oh, the mother of the child, sorry

Do do

Sorry sorry

Do do do

Sorry sorry sorry

A woman in a polygamous home sang this folktale song. Her co-wife (the older one) did not have any children and was unhappy with her (the younger one). The older wife was determined to get her into trouble. The younger wife took her co-wife's water and gave it to her child who was thirsty. Her co-wife found her opportunity in that. She insisted that she return her water, and it must be from the king of the rivers, *Eze Ogba*, that no one fetches water from. She knew quite well that no one went to *Eze Ogba* and came back. At the stream, the woman sang the song to the spirit of *Eze Ogba*. The spirit took pity on her and allowed her to fetch water from the river.

This song exposes the problems of polygamous life. It shows the extent to which hatred could be expressed in such homes. It brings to the fore envy, jealousy and anger of the barren woman. By implication, too, the song warns against polygamy and the problems that go with it. As such it seeks to propagate happy and joyful homes that engender integrated and unified communities. In this song we find archived data on the position of the Igbo on polygamy, wicked co-wife and social relations in the family. Moral messages in the song are quite obvious.

Visual Archiving By The Igbo

Autochthonous Igbo used some forms of visual archiving of historical data as reminders or memorials of important events or occurrences in their society. These include use of marks on mud walls with *nzu* (white clay) or *uli* motifs (camwood) as symbolic representations. Uli motifs are also used for body ornamentation. Elizabeth's lexicon of Igbo uli motifs (1987:91) is a detailed presentation on uli motifs in Igbo land. According to her, these motifs represent things of physical importance, aesthetic appeal and relevance to traditional beliefs (Ibid). Planting of the *oha* (an edible shrub) has been used as memorial for events or occurrences. Stones have been used in some instances as memorials. Visual archiving of historical or collective memories is sometimes presented in the form of festivals and ritual observances. For instance, until recently the Abiriba people of Igbo land celebrated their exploits in past wars in annual festivals.

Title/political hierarchies are shown in different ankle and wrist adornments. Socio-religious statuses sometimes require body incisions/scarifications called *ichi*. Similarly some socio-religious practices involve visual archiving of data sometimes prescribed by the deity. One established socio-religious form of visual archiving, though becoming extant now, is known as *mbari*. Also in this category is visual archiving in *Ikenga*. Another unique form of visual archiving by the Igbo is archiving of cultural and moral values in visible natural phenomena such as the checkered shell of the tortoise, thunder and lightning, death, sky and earth, beardless woman, day and night. Visual forms of archiving such as these have very strong socio-moral roles among the Igbo. Three unique types of visual archiving are presented below to demonstrate cultural archiving by the Igbo.

Mbari (See Plates 3-5)

The most benevolent and productive of Igbo gods is *Ala*, the earth goddess. Lying between the physical and the spiritual, it is believed to be a female god of fertility. The earth goddess, being very active in the affairs of the Igbo in fertility and creativity, sometimes prescribes its mode of worship in unique creative works through the priestess. This includes erecting a religious-cultural-artistic temple called *mbari*. Mbari art is practised more in the southern Igbo area of Owerri. Mbari is a dynamic manifestation of socio-spiritual-creative interaction. The gallery plays *Ala* as the central idea and then dramatizes the world in miniature around her dominating essence (Nzewi 1991:13). In Mbari ritual art, people without formal artistic education construct a mud structure and form for the gods, the act of building being itself a prayer (Enekwe 1987:50). When *Ala* reveals it, the community mobilizes religious, economic and creative commitments to fulfill, as well as ensuring erection of a *mbari*. The many murals that decorate walls of *mbari* temples illustrate the Igbo achievement in pictorial art (Ugonna 1983: 17). This annual religious-artistic construction (a model has been preserved in Mbari - Council for Arts and Culture, Owerri - see plates) is ultimately an archive of cultural/religious practice in visual form. Freedom to create as and what artists choose enables creation of sculpted works that capture various observable features of the community, thereby archiving them. It simultaneously manifests religio-cultural belief in *Ala*, and presents in visual form the philosophy behind its construction. The lesson of *mbari* is that an achievement is its own end: The thrill and dynamism to achieve burn out with achieving, and thereby give scope for growth of a fresh incentive for another achievement (Nzewi: *ibid*). As such, when completed the building together with its images is abandoned. Nobody makes an effort to preserve it from collapse or decay (Enekwe: *ibid*) until it is time for constructing another *mbari*. With all its spiritual and physical properties, Mbari is an example in visual form of cultural archiving of collective memory, culture, ritual and religious practices by the Igbo. After erection and dedication, *mbari* explicates the essence of *Ala* to the community, and is a communal memorial of the cultural practice for the younger generation. The practice is dying out as a result of modern civilization.

Ikenga (See plates 6-7)

The concept of individualism among the Igbo is expressed by the cult of *Ikenga*, which symbolizes a man's talent and strength, enterprise and achievement (Enekwe: 48). The commonest form of *Ikenga* is a carved man made to appear young, strong and healthy. He may be sitting or standing, with two projections resembling a ram's horns on either side of his head (see plates). The choice of what he carries in his hands depends on the owner's exceptional achievement. He could carry sword and human head if he has taken heads in war. He could also carry a spear, machete, or gun. (A larger than normal sculpted *Ikenga* is at the department of Fine and Applied Arts, University of Nigeria, Nsukka, plate 3.) The size of *Ikenga* depends on the owner. Quite often, *Ikenga* is small enough to be carried about by the owner in his bag after consecration. Some are held in the owners' hands as they move about. The hand-held types may not carry any objects, so that the hands can hold them firmly (see plates). Their function is to induce or supply the impetus or drive for achievement (Afigbo 1986: 6). The *Ikenga* is also believed to ward off evil spirits and bad luck for the owner (Ogbalu 1979: 226, translated from Igbo by the writer).

Afigbo (1986) presents an invaluable study of *Ikenga* in Nigeria covering its origin, distribution, and function. The merit of the study includes his attempt to present a preliminary investigation of *Ikenga* art as historical record. His presentation is of immense significance to this study, so this paper will draw from his lucid inquiry.

Basing his argument on the conscious, elaborate decorations on Benin bronzes as probably consciously 'narrative' in intent, deliberately made to record and convey some information about specific events or persons, provided they can be properly dated and interpreted, Afigbo argues that if properly dated and interpreted, the *Ikenga* offers a visual record of historical events/occurrences. He presents an illustration with *Ezomo's Ikengobo* as a good example of an *Ikenga* or art-piece that was consciously historical. It was cast to celebrate and record certain events associated with the life and times of a particular *Ezomo*. Posing a question on whether a man who killed his first elephant would ask for an *Ikenga* that carried a machete in one hand and a human head in the other, or would ask for one that carried a gun in one hand and an elephant tusk in the other, he brings us face to face with the possible, if not obvious, role of the *Ikenga* as historical record cum archive of events/achievements by the Igbo. From this line of thought, we deduce that an enormous amount of data implicating cultural practice, and social and political achievements/issues are archived in *Ikengas* of different persons in different communities. Synchronization of *Ikenga* form with the owner's achievements explicates conscious effort on the part of the owner to manifest and archive in visual form his achievements, belief, drive or aspirations. Thus it is possible to infer from the *Ikenga* of a person that he has killed an elephant, lion, human being in war, or that he is a hunter, head of a clan, a chief, etc. Given appropriate enquiry, it is also possible to decode the rich information archived in these impish figures. It becomes obvious then that the *Ikenga* functions as a historical archive beyond its

artistic/aesthetic features. The tragedy of the Ikenga, however, is that it is 'killed' (buried or burnt) on the death of the owner, thereby eradicating all the information archived on it. Autochthonous Igbo believe a man's fate represented by his Ikenga is not hereditary. This certainly amounts to a great loss to research and scholarship.

Archiving On Natural Phenomena

A distinctive mode of archiving of moral cum cultural issues emanating from Igbo world view by the Igbo is cultural archiving on natural phenomena. Quite often, inexplicable natural phenomena form the basis of stories that seek to find answers to the mysteries behind them, and to convey moral lessons. Such natural phenomena become visible records of certain valuable cultural data in disguise. Sight of them brings to mind the data they represent among the Igbo. Examples abound. These include stories of the origin of day and night, origin of death, and why the sun lives in the sky. I have chosen to present one of such stories here to illustrate this type of visual archiving. It is of why the sun lives in the sky.

It is told in Igbo that the sea lived in a valley while the sun lived on a mountain. They were very good friends, and the sun visited the sea frequently. The sea would not return his friend's visit until he persuaded him, wondering whether the sea thought he did not have food to give him. On his next visit he implored the sea to visit him but the sea told him he would be unhappy if he returned his visit. The sun insisted. The sea was constrained to accept the invitation to visit the sun the next day. The next day the sea started rising and flooding everywhere. As he approached the mountaintop where the sun dwelt, the sun began to fear he might drown. He moved on to the next mountain. But the sea followed him. As a last resort the sun flew into the sky and made it his abode. He has remained there ever since.

From this story the Igbo tell you not to invite anyone you do not know well to your house as you might be harmed. Seeing the sun in the sky reminds one of this story and of the moral lesson inherent in it. In this way it is a kind of visual archiving. A collection of similar stories is found in Egudu's *The Calabash of Wisdom and Other Igbo Stories* (1973).

From these expositions, it is deducible that the Igbo have consciously developed types of audiovisual archiving for purposes of conveying some cultural and historical records to the present and coming generations. These unique visual archiving systems, though extinct in some instances, serve the intended purposes in the Igbo cultural context. Today modern civilization has brought new forms of archiving. The significance of these archiving systems and the data they convey enable us appreciate the emphasis the Igbo place on archiving the past based on the philosophy of *Onye amaro ebe mmiri bidoro maba ya, ogaghi ama ebe onoro kwusi ima ya*. Explorations of these systems of archiving would place before scholars enormous amounts of data that could lead to a better understanding of Igbo cultural heritage. Only direct questioning and intensive research could reveal the data archived in both the audio

and visual systems. Collaboration with the natives that own the oral tradition is deemed essential to ensuring that clear and authentic data are collected from various sources. Better still, funding of research by scholars who belong to the research areas would place before us authentic research data with appropriate interpretative approach.

Conclusion

Presentations in this paper, which are essentially expository, do not pretend to be a comprehensive study of all the micro and macro forms of audiovisual archiving among the Igbo. Instead, the paper attempts an introduction that could lead to further enquiries cum explorations in and outside Igbo land. We observe that archiving, audio and visual, is well understood by the Igbo, as well as being used in preservation of the past. We also observe the use of unique archiving in natural phenomena that do not change with time or generation. Such archiving offers enormous research possibilities/documentation. Research documentation of available audiovisual data before they become extant would be a great service to the world of scholarship and the coming generations of Igbo people. This is the challenge of our time.



PLATE 1: Normal Ikoru/Ufie. Note the carving of wrestlers on it pointing to a time when wrestling was an important cultural event.



PLATE 2: Ikoru Umunze, a very old and large instrument. A player climbs to the top of the instrument with a ladder.

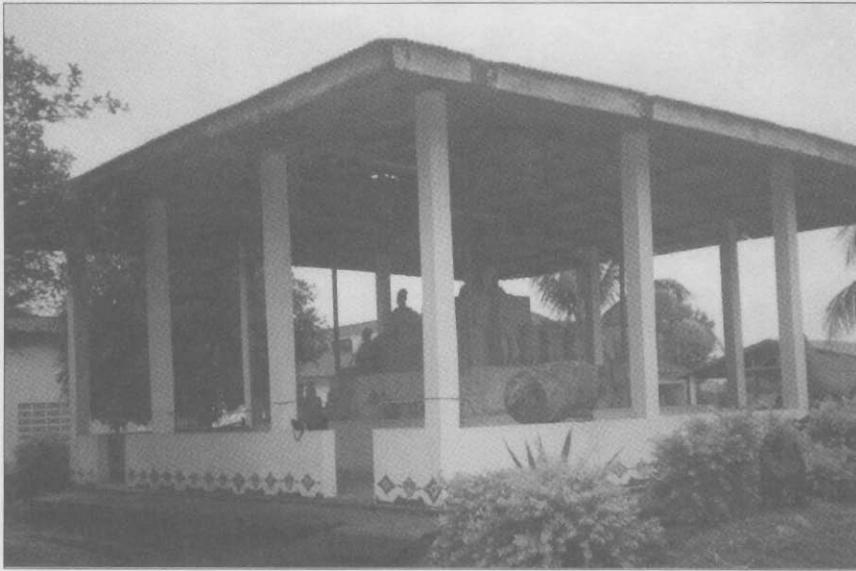


PLATE 3: Mbari model in Council for Arts and Culture Owerri

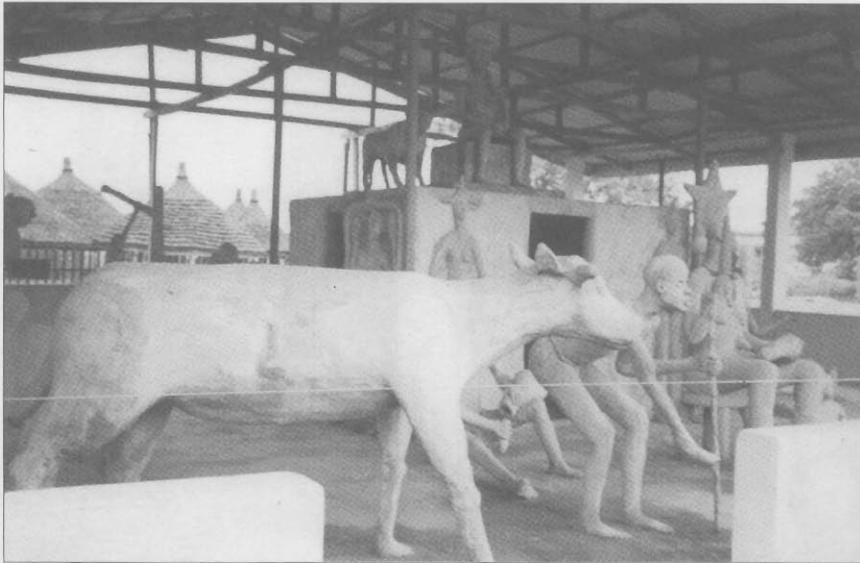


PLATE 4: Some Mbari sculptures



PLATE 5: Some Mbari sculptures



PLATE 6:
A model of ikenga in the Fine and Applied Arts Department, University of Nigeria.

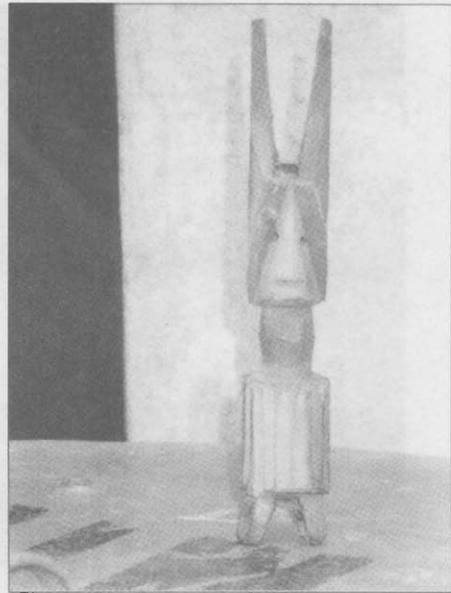


PLATE 7:
Ikenga (hand held type that carries nothing).

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Musical Transcription and “Virtual-Scape”’: Reconstructing Collective Memory.

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Paper presented at the IASA Conference, Pretoria (City of Tshwane), South Africa, 2003

It is common knowledge, that of all the archival systems, African music transcription is perhaps one of the least developed. Ethnomusicologists have perceived the use of “Common” (Western conventional) notation in a representation of traditional African music as largely deficient and unreliable. This paper attempts to make a case for transcription as an important adjunct to sound recording for archival purposes in Africa.

Attempts made at finding alternative methods of transcribing African traditional music have not lived up to the task for which they were intended. (See Koetting 1970, Pantaleoni 1972, and Doris Greene). Yet those who embrace the use of the ‘common notation system’ for African music have not developed an explicit conceptual framework nor have they devoted theoretical attention to the clarification of the system in application to African music.

Those who are skeptical about the use of the system seem to argue that, the volatile and perceived illogical or irrational nature of traditional African music organization does not manifest with the kind of logical system that ‘structures and animates’ the “Western” notation system and therefore its application must be approached with caution.

The purpose of this paper is to present some justification for the essential structural commonalities between Western and African music. I do so with the hope of helping to diffuse the on-going¹ politics of notation circumscribing the discourse on African musicology. There is indeed an urgent need to reappraise the conceptual framework of notation and its application to African musicology as a way to facilitate the oral and aural methods, making it a more reliable part of the archival system.

Philosophical Consideration

I am a great fan of the ancient Greek Platonist philosophy of form and representation. I am fascinated by the two-level reality concept expressed by Plato - one that is very volatile and imperfect and the other an idealism that is understood by way of the intellect. It occurred to me that understanding this philosophical concept in relationship to African music would provide the right framework for our discussion.

When God in his infinite wisdom created mankind, he apportioned things equitably to all peoples according to his will. A senior colleague of African

¹ See Agawu, Kofi 2003

religion used to say there is nothing one generation of people has said that another has not thought about. It is regrettable that the passion to see difference in the world's cultures has indeed so characterized intercultural scholarship as to create a divide between the West and other cultures of the world. There is an African story about three blind men who came into contact with an elephant. One touched the trunk, another the leg and the third the broad side of the body. In describing the elephant, one said it was long like a snake. The other said it was rather like a tree trunk. The third said it was a plain surface like a wall. We must begin to see ourselves as part of one indivisible whole and that our similarities far out-weigh our differences.

Like the Platonist concept, African religious philosophy is predisposed towards bi-polarity. For example, artists have expressed African Art as a representation art - for, a sculpture piece is merely a reminder of an ancestor; a masked dancer in a 'masquerade' takes on the image of a spirit being, while a traditional healer makes a spiritual journey into a realm of knowledge, perfection and truth. This world of perfection is indeed a constant part of the African worldview of idealism.

Idealism constitutes a mental-cultural space that is, in this context, ethnic-bound. First of all, it consists of a level of critical and intellectual understanding, which lies deep in the collective memory of a people. Consequently the culturally situated critical knowledge is preserved by way of the intellect of those regarded as custodians of tradition, be they carvers, weavers, healers, medicine men, priests and their mediums and, of course, music specialists.

For master musicians, the musical craftsmanship, constituting the highest artistic reality, is handed down from generation to generation. The reality-state therefore constitutes a virtual realm where cultural essence of a people's musical identity is stored.

To many Africans, this virtual world accessed via dream state, is the source of creativity attributed to God through ancestral spirits. The performer/creator therefore is a mediator connecting the spirit world and the community. It is the reality realm that keeps a people's cultural identity in check.

Communities share a collective memory of their music. However, the levels of memory vary. They are critical on the level of Master musicians and general for the community at large. A community performance is merely a representation of the ideal or reality-state stored in collective memory and manifested on a level of 'sensory experience'. The divine master musician owes it a duty to provide music leadership for the general community. Interjecting a wide degree of tolerance ultimately compensates for the obvious variations in the manifestation of the ideal. The music emerges from a principle of collective social participation with a high incidence of social interaction. A reliable transcription ought to take full cognisance of the reality-state, on the appropriate level of inquiry and should not be dependent merely on performance manifestations.

Investigating the 'same' rhythm heard among the Fon of Benin and among Lukumi of Cuba, there is an entirely different perception that transforms this original Ewe perception into a totally different rhythm as follows:

Fig 3.



Time intervals: | 2 | 2 2, | 2 | 2 2, | 2 | 2 2,

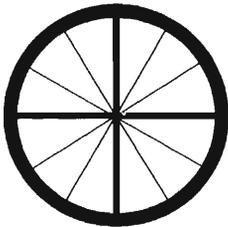
Thus the same rhythm is perceived in two different ways among the Ewe on one hand and the Fon and Lukumi on the other. The concept is homonymic in the sense that the rhythms sound the same on a superficial level but perceived differently to different people. This is further evidence that beat perception (the way we culturally perceive beats in association with rhythm), essentially establishes rhythm within a particular cultural framework. Simply inferring the concept may lead to a misconstrued perception of the ethnic norm. Ethnic perception is therefore pre-eminent in a theoretical consideration.

The Theoretical Framework

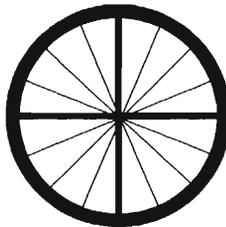
Generally, music is psychologically formed within mathematical grids. In African music, there are three identifiable grid types e.g.,

Fig 4

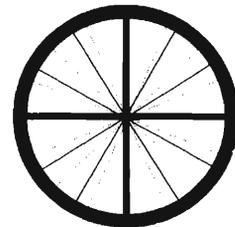
a. 12 grid type



b. 16 grid type



c. Cross-grid type.



- Represents a four beat cycle consisting of three time points per beat (as in 6/8 meter).
- Represents a four beat cycle – four time points per beat (as in 2/4 meter).
- Represents a four beat cycle with tuplets in the case of 6/8 and triplets in the case of 2/4.

The grid concept corresponds to the 13th century Ars Nova idea of *tempus perfectum*, *tempus imperfectum* and their *prolationes*. A particularly significant dimension

lies with certain social implications of the 16 grid, the 12 and the cross-grid. So far, based on the traditions to which I have applied the theory, there is some degree of correspondence between the 16 grid and recreational music, the 12 grid and ceremonial music, and the cross-grid and ritual or prowess music - music that challenges us to be brave and invokes our spiritual consciousness.

Rhythm in African music is a circular concept – not linear. This circular concept of time ultimately defines a structural² set. Invariably, the set constitutes two measures of 2/4 or 6/8 each consisting of four equidistant beats. The cycle is defined by the occurrence of one regulative beat in each cycle. The set represents a structural module from which an entire performance is derived.

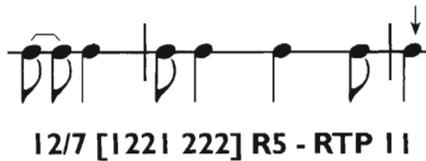
In view of the set properties discussed the following schematic formula brings out the general and specific ethnic characteristics of three similar rhythms of the Anlo Ewe of Ghana the Yoruba of Nigeria and Bemba of Central Africa.

Fig 5.

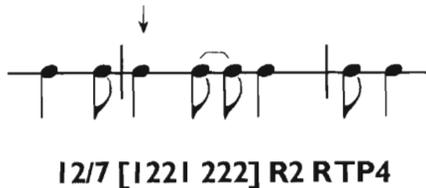
a. Anlo Ewe.



b. Yoruba



c. Bemba

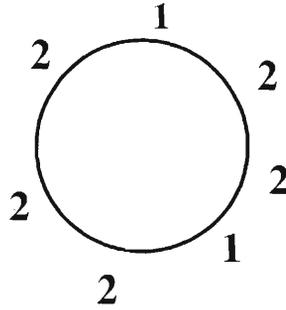


The three set rhythms are of the 12 grid-set type. There is a total of seven attack points in each case. The sets have time intervals of 221 2221 for the Ewe; 2212212 for the Yoruba and 2122212 for the Bemba. To describe these set rhythms considering their embedded rotational possibilities, we need

² See Anku, W. 2000, Circles and Time

to establish a *prime form*. The prime form defines the set rotation with the least time interval arrangement at the beginning of the pattern (*in unordered form*). Thus the prime form 1221222 is common to the three sets. In other words, they are rotations within the same prime.

Fig 6.

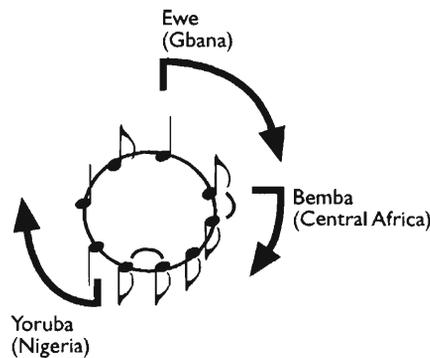


Each tradition perceives a different beginning (*a different rotation*) within the prime. Thus:

- 1221222 - is the prime (R0)
- 2212221 - is rotation 1 (R1)
- 2122212 - is rotation 2 (R2) etc

The Ewe beginning therefore would be prescribed as rotation 1 of the prime; the Yoruba - rotation 5; and the Bemba - rotation 2.

Fig 7.



Finally, the Regulative Time Point (RTP indicated by a down arrow) implies that the Ewe, the Yoruba and the Bemba perceive the regulative beat and its' equidistant beats differently. The analytical schemes, (12/7 [1221222] R1 RTP1) for Ewe; (12/7 [1221222] R5 RTP1) for Yoruba; and (12/7 [1221222] R2 RTP4) for Bemba - then bring out both the physical and psychological properties to the fore.

Idealism and Transcription

In Ethnomusicological research the methodology and the system of transcription employed by the researcher is informed by the purpose of the transcription. The presentation of a notated score of a performance for the purposes of analysis warrants a full understanding of the philosophical context as well as the psycho-acoustic and mathematical considerations discussed.

Recording a performance of a Chopin nocturne, with its twists and turns of temporal expressions, and attempting to present a faithfully transcribed score from the recorded performance would be absolutely absurd. We would then refer to the original score from which the performance is derived as the compositional ideal while the recording of the performance - a representation of the ideal. Similarly, in the African context the community performance is only a representation of the ideal embedded in the intellect of the master musicians on a critical level and the community on a general level.

We have so far underscored the importance of understanding the collective ethnic perception and that it is not negotiable and cannot be inferred. The tactus is the most important element without which the transcriber loses grip of the transfer process. Knowing precisely where the beat falls and what goes on within each 'beat area' is pre-eminent in this process.

A number of clichés abound in the field, which seems to impair the ability to faithfully transcribe rhythms in African music:

1. **Additive and divisive rhythms:** The important difference between additive and divisive rhythms lies in whether the transcription can be understood in terms of the underlying beat referents (as in the divisive concept) or whether it is merely based on a succession of attack points and their corresponding durational intervals, in which case the beat concept is downgraded or non-existent.

Fig 8.

• **Additive**



• **Divisive**



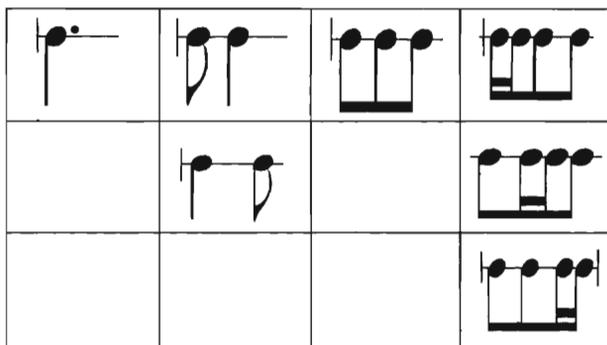
The³ additive system obviously presents a way-out in cases where there is apparent difficulty in perceiving the prescribed felt beats. Since the beat is key in defining the perception and, to a large extent, the ethnicity of the rhythmic passage, I endorse divisive writing for its dependence on beat divisions as the most important organizing element.

Logically speaking, there are relatively few note combination possibilities that may occur on any given 'beat area'. I refer to these combinations as rhythm chunks. The following 'chunks' are most commonly used in triple and duple time, respectively:

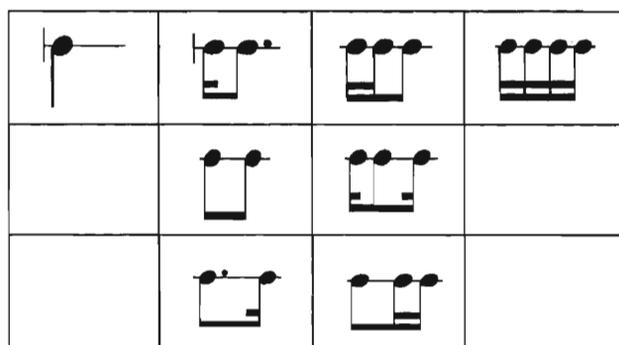
Fig 9.

Chunks:

Triple



Duple

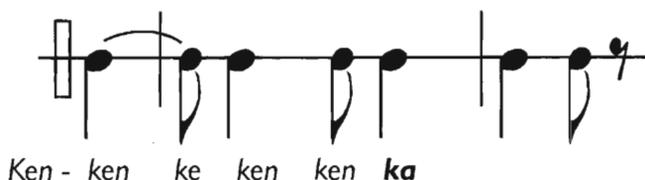


³ See Agawu, K. 2003

My particular teaching approach puts emphasis on learning these rhythm chunks and consequently hearing rhythm as chunks around the beat rather than a succession of individual notes. With the combination of ties and rests, chunks offer a great way to hear and represent rhythms in African drumming.

The onomatopoeic syllables - syllables that imitate instrumental sounds in various drum cultures (e.g. “ken, ke, ka” sounds of the *Adowa* bell [dawuro] among the Akan of Ghana) imply certain durational principles. “Ka” suggests a short decay, while “ken” a more sustained duration. The *Adowa* bell is therefore sounded as follows:

Fig 10.

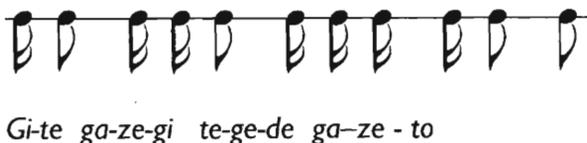


These principles must be taken into consideration when transcribing drum music. Inserting rests after every attack point would not convey these embedded durational concepts.

In my view, note values ought to be informed by the durational values of vocables associated with respective instruments in the various drum cultures.

- 2. Chunks versus morphological divisions:** Another problem associated with impaired-beat transcription is the tendency to depend on morphological divisions of rhythm rather than chunks ordered around the occurrences of the beat tactus. There is a natural tendency to hear rhythm as additive configurations in morphological groups without any consideration to the embedded beat perceptions as in the following example:

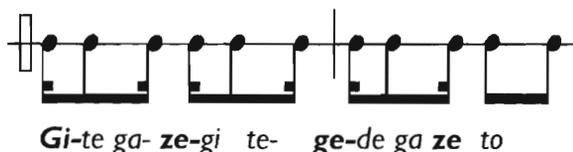
Fig 11.



This presents a particular problem for transcription.

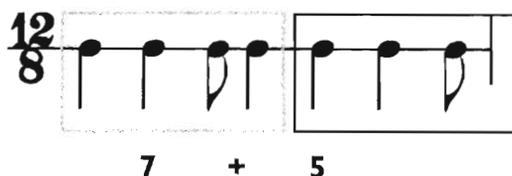
On the other hand, hearing the same passage with the prescribed beat perception in mind transforms the concept to very simple and basic divisive chunks as follows:

Fig 12.



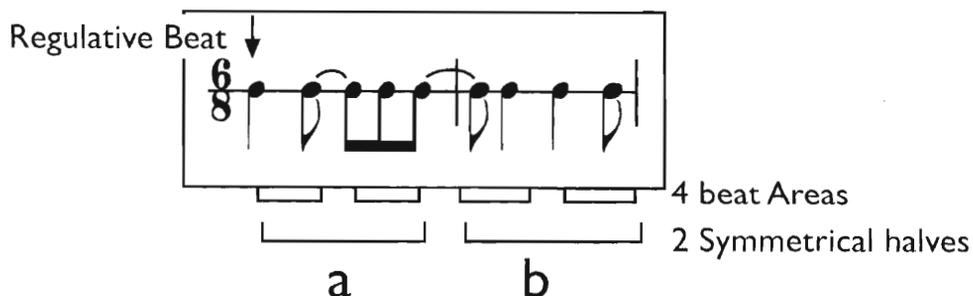
3. **Symmetry and asymmetry:** Anthony King, in his discussion of "Employment of the African Standard Pattern in Yoruba Music" (1961), refers to a characteristic asymmetrical 7 + 5 division of the Yoruba time-line pattern. Example:

Fig 13.



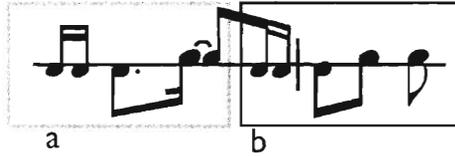
His conclusion is based purely on the morphological divisions rather than the metrical concept of the pattern. The pattern is polarized into two symmetrical halves, each consisting of two equidistant beat divisions.

Fig 14.



African set rhythms are characterized by these structural elements. In various traditions the two sections “a” and “b” are manipulated to interject variation in the music. For instance:

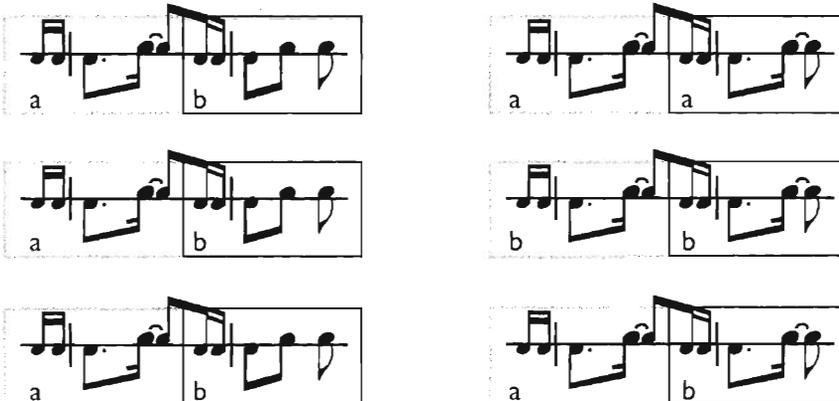
Fig 15.



may be performed as follows:

**ab, aa,
ab, bb,
ab, ab**

Fig 16.



4. **Some Common Errors:** In West Africa, and Ghana in particular, certain transcription conventions have evolved largely due to the influence of the work of Dr. Ephraim Amu, a renowned composer of Ghanaian choral music. His quest to establish a certain degree of ‘Africanness’ in his treatment of “African rhythm” has resulted in some mathematically incorrect representation of his notation. In short, what is sung is not exactly what is rhythmically represented in his⁴ scores. For instance:

a. The basic “hilife” dance rhythm sounds as follows (in 2/4):–



⁴ Amu Choral Works 1993

b. In other examples such as “Bonwire kente” we find the use of nested triplets:

Fig 18.

E. Amu

The musical score for "Bonwire kente" by E. Amu is presented in three systems. Each system consists of a vocal line and a piano accompaniment. The piano part is divided into two staves: the upper staff for the right hand and the lower staff for the left hand. The key signature is one flat (B-flat major or D minor), and the time signature is 3/4. The score is characterized by the use of nested triplets, indicated by bracketed numbers 3, 9, and 27. The first system shows the beginning of the piece with a vocal line and piano accompaniment. The second system continues the piece, with the piano part featuring a complex rhythmic pattern of nested triplets. The third system concludes the piece, with the piano part featuring a final sequence of nested triplets. The vocal line is written in a single staff, and the piano accompaniment is written in two staves.

The following is actually what is intended:

Fig 19.

Edited by
Willie Anku

Moderato ♩ = 96

The musical score for Fig 19 is presented in three systems. The top system is labeled 'Solo' and the bottom two systems are labeled 'Piano'. The music is in 2/4 time and marked 'Moderato' with a tempo of 96. The key signature has two flats. The Solo part consists of a single melodic line. The Piano part consists of two staves: the upper staff has a treble clef and the lower staff has a bass clef. The piano accompaniment features a steady eighth-note bass line and chords in the right hand.

- c. There is yet another erroneous use of triplets. Amu believes that the universe of 'African rhythm' (rhythm in African Music) evolves around 2/4 meter and that the paradoxical duple-triple concept rests in the extravagant use of triplets. An obvious consequence is that music formed naturally in triple grid is imposed on a duple grid, resulting in the use of triplets throughout the composition.

Fig 20.

Asem yi di ka (as written):

ASEM YI DI KA

To moderate pace Dr. E. Amu

A - sem yi di ka, e di ka be na be ka ma a ta ma ta c

Asem yi di ka (as intended):

To moderate pace Transcribed
by Willie Aikku
Music and Words by
Dr. E. Amu

Amu, as we have been told, went round Ghana teaching his compositions. As a result, musicians now know these songs and interpret the scores based on their memories of his intentions. While we still have these memories, these fine⁵ compositions **need to be edited** quickly for posterity and to afford others without the privilege of knowing the composer's intentions the ability to share in the music as intended.

Reconstructing the Performance

Despite the huge apprehensions and politics about the applicability of notation to non-western music, transcription continues to be one of the most important pillars of Ethnomusicological study to date. For, as stated by Ter Ellinson, (1992) *this method provided objectively quantifiable and analyzable data that furnished a solid base for ethnomusicology's claim to validity as a scientific discipline.*

The problem of notating African music does not rest with the choice of a notational system itself. It rests with our ability to understand the music so well as to be able to apply whatever system effectively. The vulnerability of the discipline to overcome the problems of understanding is evident in the use of a variety of transcription aids. From A. M. Jones' rotating graph

⁵ Amu Choral Works Vol. I, 1993

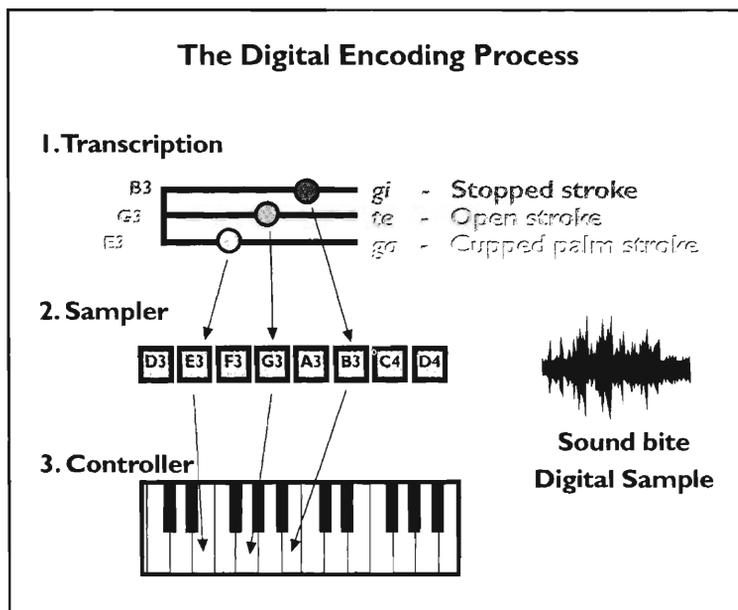
cylinder (1949), to Seeger's melograph (1974) and Simha Arom's "play back" approach (1976). Of all these systems none is as efficient and objective as the digitally encoded systems available today. Of these, digital notation software equipped with playback capability offers the greatest advantage. This facility provides a way for verification of the researcher's transcription by the "informant". Consider how many inaccurately perceived transcriptions have ended up in publications simply because the informants never had the opportunity to verify what was notated and ultimately analyzed as theory.

My particular use of the computer is not only to reproduce the music notation but also to make the transcription available for "proof reading" by means of its playback capability. In combination with the digital sampler, the technology makes it possible to take "snapshots" of the resultant sounds of the various playing techniques. These are embedded at prescribed pitch locations in the sampler. The transcription is then matched to these pitch locations. The ultimate result is that the natural sounds of the instruments are captured, making playback sounding almost exactly as expected.

This becomes an important consideration because the local musician reacts better to the transcription playback when he or she can hear the various instruments sounding as expected.

The codification process described is illustrated as follows:

Fig 21.



During my transcription process (working in collaboration with various drummers) it became apparent that drummers took into consideration the instrumental timbres as well as the *velocity* nuances in respect of certain stroke rendering to determine whether the transcription was a true replica.

In the following example the small notes indicate strokes of low velocity and are of particular importance to the articulation of the music:

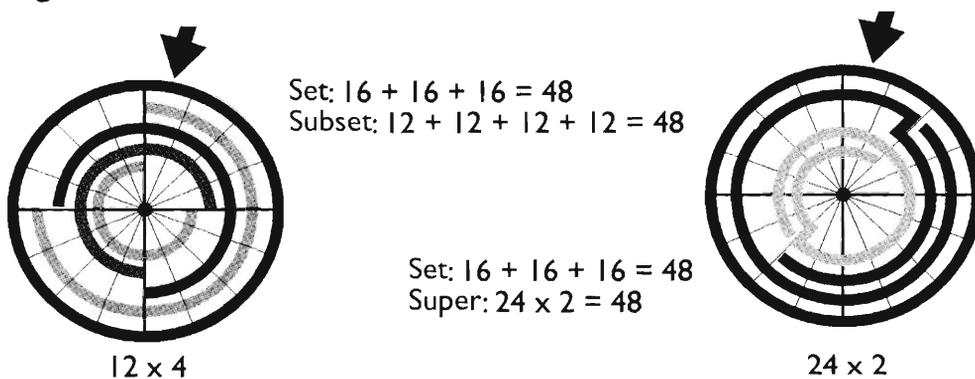
Fig 22.



Acquisition of reliable transcription is the key to objective musical analysis from which good theory emanates. The important place held by music transcription cannot be over emphasized.

A reliable transcription ought to take full cognisance of precise rhythmic relationships and perception norms on the appropriate level of inquiry and should not be dependent merely on performance manifestations. The rhythmic interaction between the master drummer and the background framework in the Bawa dance of the Dagarti of Ghana, is represented mathematically as sets and subsets or⁶ supersets in the following examples:

Fig 23.



African Music is decidedly quantifiable. To the uncultivated listener, such a claim may seem an absolute absurdity at first. It is only by externalizing the ideal that the culturally situated critical knowledge associated with each musical tradition would be realized.

⁶ See Anku, W. 2000, Circles and Time

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The Marvels Done

Matthew Davies, ScreenSound, Australia

Paper presented at the IASA Conference, Pretoria (City of Tshwane), South Africa, 2003

Introduction

As long as I can remember I have been fascinated by the personal experience of memory and forgetting, and this personal fascination has attracted me to popular explanations of the psychological theory of human memory.

More recently my work in archives has drawn me to ideas about the role of memory in society, in part I suppose as an affirmation of the meaning of my work, but also as an attempt to better understand my world in these turbulent times.

The idea that archives represent the memory of society has currency in the archival community, and is demonstrated in real institutions and structures such as the "Memory of the World" register. This idea is also seen in fictional accounts, from utopian ideals to the darker vision of Winston Smith's workplace, the Ministry of Truth in George Orwell's 1984.

This analogy has a certain logic, and provides a great support for the value of our work as archivists, but in applying such a concept I find myself asking questions such as: what is memory? Why don't we remember everything? Why do we forget? How does memory function, and what can go wrong? How can we retain or reinforce our memories?

In fact there are differing theories and views on how these questions would be answered with respect to human memory, so perhaps we are on shaky ground in attempting to explain the archiving business by analogy? This may be so, but by exploring these questions in this paper I hope that the analogy is strong enough to provoke some thought and discussion about the nature of memory and society, and the role played by archives and archivists.

Memory in humans is a complex system of inter-related Neuro-physiological processes, which selectively reinforces or weakens remembered impressions in a complex dynamic, which has evolved to support the survival and success of the individual and the species. Our memories are a complex web of associated ideas, sensations and images, which contributes to our sense of consciousness and meaning.

Memory - personal, corporate and societal

Memory is important at personal, corporate, national and global levels, and not just for utilitarian reasons. To quote J R S *without memory there is a vacuum. Propaganda thrives in a vacuum, as does ideology. As does Public Relations.*

All three replace context with scrambled fragments of memory. The concept of memory seems universal, but there are important distinctions between the individual human memory and the culturally created corporate and societal memories we are discussing here.

Although we have some conscious control of our memory processes our personal memory is constrained by the biological equipment we have evolved as human creatures. We can make choices about how we use this equipment, and we can work on our memory skills to improve our abilities but we cannot expand or re-furbish the “hardware” of neurons and synapses.

As a society, however, we have evolved ever more complex systems to store and retrieve ever-larger volumes of information. This evolution is also reflected in the corporate systems of memory that supports increasingly complex business within the “information economy”.

As these systems become more complex, the detail of information storage and retrieval becomes so intricate that it is increasingly seen as a background process, a mere detail of process while the interesting developments are seen from a higher-level “systems” approach. The detailed business of meta-data schemes, cataloguing rules, management of fonds, series and records is a technical matter, seemingly of concern only to the specialists who have to make it happen.

Of more interest to institutional managers and society in general is the overall function of collections and institutions and the contribution they make to social discourse, commerce and culture.

This reflects the division in psychology between the study of neurological mechanisms describing the micro-management of memory, and the area of cognitive psychology where study of memory is at a systems level.

Structures of Memory **Short and Long Term Memory**

Short-term memory allows us to retain an impression from our senses for a few seconds or at most minutes, while cognitive processing is carried out. Those impressions from short-term memory that sufficiently engage our attention are transferred to long-term memory. Some theorists prefer the idea of working memory, a system for retaining information in consciousness while it is processed.

Long-term memory is the “deep store” which gives us an ability to recall skills, events and impressions from the deep past of our personal history. Current theories of human memory are unable to put limit on the capacity of this store, but even if it might be unlimited, long-term memory is not a perfect detailed record of our experiences.

Long-term memory is reconstruction, not an exact copy. Through a complex network of associations, we recall the contents of our long-term memory by bringing together fragments of memory into a new whole.

Explicit and Implicit Memory

Explicit memory includes semantic memories, memories of facts or knowledge that you can't remember learning and episodic memories - memories that you can't trace to a specific event, place or time. Implicit memory is memory without any conscious awareness at all, but it affects our behaviours nevertheless. This type of memory is preserved in amnesia.

Contextual Memory

Contextual memory seems to be memory directed by consciousness. We have the ability to recall at will, to assess and analyse, to make new connections and conclusion, and to weave the web of associations in a shape of our own choosing. But our ability is not absolute even when developed, and all too often we neglect to use even the undeveloped capacity we have.

Our ability to recall is also bound up with attention and context. Our attention in the present is constantly re-awakening threads of memory - seemingly the threads that are most relevant to what is in our minds.

Attention, activation and motivation

We are continuously presented with more information than we can store or process. Our attention - through conscious or unconscious processes, determines our memories.

As humans we have some inbuilt motivations that ensure we will pay attention to some stimuli more than others, and our upbringing within a specific culture will also "program" our attention to some extent. Within these bounds we exercise free will and so we have some choice over which stimuli and memories we pay attention to.

We may also be pre-disposed as individuals to pay attention more to one or other of our senses - some of us are more visual, others more auditory.

We can strengthen our memories by deliberately paying them attention. Practice - rehearsal, repetition, and reference - makes perfect, and the very act of remembering - paying attention to the memory - increases their stability and longevity.

Memory and dysfunction

Causes and Types of dysfunction

Some of our personal memories will fade over time, though our memories may be perfectly functional. This phenomenon is called transience, and cognitive theory explains this loss by the mechanisms of decay, a weakening of memory traces through disuse; and interference, a kind of competition between old and new memories.

Cognitive dysfunction can give rise to memory errors in a physically healthy brain. Absent-mindedness occurs when we don't create reliable memories because we are not paying enough attention. Blocking is an inability to recall memories, even though the memory is intact.

Worse than these are the memory losses caused by ageing and attrition, depression and other pathologies, or by physical and mental traumas. Damage to underlying physical structure can tear great holes in the web of memory.

Possible Futures

How do the decisions made by archivists contribute to cultural memory, what are our choices and what will be the consequences? Beyond ensuring the survival of artefacts, how do we preserve their meaning and ensure that our future memories are rich in context and relationship?

The cultural memory of humankind is bound up in institutional and technological structures and processes that continue to evolve at an accelerating pace. Archival institutions are embracing new technologies and implementing new systems to store and disseminate ever-growing mountains of information; what will be the effect of this evolution?

Increasingly sophisticated societies depend on increasingly sophisticated information resources, and information resources are just another name for memory. We as archivists, custodians and librarians are building this memory with a rapidly changing set of technologies, and it makes me wonder what sort of a future do we imagine for our collections and society?

In imagining the future I must draw on my own memory, and extrapolate from the successes and problems of what to me are state-of-the-art archiving solutions, but will no doubt one day be remembered as a tentative beginning, like a child's first steps.

First, I will indulge my optimism - if we get this right, could we create an information Utopia?

An Information Utopia

In the information utopia everything you hear on the News is true. We have learned the lessons of history and the voices of the past are a constant council and comfort and. Authors and owners receive a fair payment for their efforts, but no-one is denied access to culture or knowledge due to lack of money. Results of Internet searches are reliable, relevant and comprehensive. Private information is respected and secure, and public information is freely available to all. Archivists are highly respected and well paid.

An Absent Minded Future

In the absent-minded future our societies short-term memory is so overloaded that our capacity to form meaningful memories is overwhelmed.

It's easy to see how a situation in which limited resources are available to handle ever-greater demands could lead to this type of future.

The processes of absent-mindedness may already be at work; consider the following example: I was working with a group of staff at a small national broadcaster, which had an efficient archive and a sophisticated digital broadcasting system. This organisation had realised that it was important to regularly copy important stories from the on-line broadcasting system to tape for archives, and had documented procedures in place to ensure that this would happen.

But as this small group of archives staff, engineers and broadcasters worked through their archiving issues, suddenly a realisation occurred which captured the whole groups attention. The system wasn't working! Day-to-day pressures kept everyone so busy that no-one felt they were able to take on the job of routinely selecting and copying important broadcasts.

An Amnesiac Future

Failures in systems for managing long-term memories might bring about an amnesiac future. Amnesia can be total, where nothing is remembered at all, or partial in which case either 'slabs' of memory from a particular time are forgotten or some specific memories of a particular event or subject are lost.

It's almost as if these memories have been erased, although it may in fact be an inability to recall rather than actual loss of memory that causes amnesia.

The fate of early TV heritage in many countries seems to have some of the characteristics of amnesia. Practices such as re-using video tape result in a very incomplete record of what is arguably the dominant medium of the late 20th Century. Today large collections of early TV are held only on obsolete media such as 2" Quadruplex videotape - surely this is a memory under threat of extinction.

A Free-For-All Future

In this future a neural network of individuals replaces the structure of institutions. More anarchist than laissez-faire, this approach leaves selection and management to the taste and vision of each participant. Such a future requires information systems that are self-organising, in the absence of centralised management.

The most striking attempt to implement this model to date is the Napster phenomenon - a peer-to-peer network based around the internet allowing users to exchange music; it reminds me of the folk tradition of musicians learning tunes from each other to extend their repertoire. But this system fails because there is no return on investment for the record companies. Perhaps the future will be market based?

A Free Market Future

In the free market future culture has become a commodity. Memories are traded like futures or auctioned on e-bay. Intellectual property owners invest in preservation of their audiovisual assets and develop private networks to control distribution.

The worlds largest record companies already have significant private networks, global in scale, coupled to huge mass storage systems. Recent studies predict that consumers will increasingly download their entertainment and culture on a pay-for-play basis.

Some might see this future as a kind of utopia, but those of us who care about the “public domain” would prefer a compromise. What is the best we can do?

The ‘Best We Can Do’ Future

In the best-we-can-do future archives and information resources are faced with constant cycles of re-invention, restructuring and renewal, in an effort to balance the holy grails of efficiency and effectiveness against the sacred cows of heritage and history. In this future we archivists walk a winding path, re-inventing and redefining our direction to suit changing fashions, fads, management theories and political realities. Money comes with strings attached, and technology always seems to promise more than it delivers - don't worry it will all be fixed in version 6.6.6.

Whether or not this is the future, it seems a good description of the present. Many audiovisual archives, and especially the large Australian institutions with which I am most familiar, are in a period of rapid and profound change in technology and business structures. New forms of funding, new institutional relationships and structures and new expectations by government and other stakeholders create pressures, which are causing us to evolve rapidly.

Part of this rapid evolution is compromise: in standards for digitisation and cataloguing, in selection policies and in models for customer service.

Memory and History

History – events or ideas?

As memory is a more than a simple recording of perceptions and sensations, so history is more than a record of dates, places and event. Such a history would be merely “semantic: memory, almost a rote memory, explicit but not conscious. The content may be exciting, or romanticised but it is fixed, without room for interpretation.

History is far more interesting if we see it as J R Saul’s “instrumental memory”. In his book *On Equilibrium* Saul says - *From memory we ...grasp a context. Without a context there is no civilization, no society, no profound relationships with other(s).*

Conclusion

In conclusion it seems to me that as individuals or as archivists are continuously making choices about what we remember, how we remember it and what use we make of our memory in forming our present and our future. We remember what we want to remember, but only the truth will set us free, and for all that the truth is inspirational and glorious it can also be unpleasant, hard to find, and its seen differently depending on your point of view.

As a community our institutions each play a role in servicing the community with a healthy memory. Our diversity is a great strength, we each have our own areas of attention, partly complementary and partly overlapping, so that we have a rich variety but also some redundancy. This is some protection against the loss of aspects of the total memory from one or other institution.

Our institutions also play different roles as memory structures. Although each functions as a whole, it also plays a unique role in the total system. We specialise, to various degrees, due to our collections, our policies, and the connections we have with our society. Most of us play some part in long-term, in short term and in working memory, while also trying as best we can to add context and meaning.

As professional employees or public servants we have a responsibility to manage the machinery of memory, in accordance with the ethics of our profession and the directives of our governments or institutions. Our day-to-day labours provide the micro-management of neural connections, and maintain the blood and oxygen supply so that the memory centres continue to function properly. On a higher level we monitor, review and improve the effectiveness of our societies memories in supporting thought and actions that are both creative and rational.

If we fail to maintain the nuts and bolts of memory we face a future of amnesia, or at best absent-mindedness. If we succeed in the machinery of memory but fail to maintain the context in our collections we risk becoming irrelevant or forgotten. Our societies will lose any insight or wisdom that should come from experience, and our information utopia might even become the ultimate nightmare. We must not fail, for it is memory that makes it possible to relate to the past, to the possible future and to each other. It is memory that makes it possible to say "Sorry" and it is memory (well actually it's my Mum) that reminds me to say "Thank You".

And I must not forget that to say that memory is also the wellspring of story-telling and creativity. As Sir Henry Parkes asks us in his poem "Fatherland":

*Shall we forget the marvels done,
By soul outspoken, blood outpoured,
By bard and patriot, song and sword?*

I know I will remember coming to Pretoria to give this talk, for as long as I can remember.

The Use of CD-Rs for Archival Storage and Preservation Vulnerability of CD-Rs Based on the Susceptibility to Sunlight Experiment

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Abstract

Audiovisual archives with technical and methodical knowledge play a vital role in preserving collective memories of societies. Today's proper storage and handling of digital information and carriers are very important for future users of audiovisual collections and for preserving the past for the future. Many audio and audiovisual archives use the CD-R medium as a temporary target medium for transfer of analogue recordings. It is the aim of this paper to draw attention to the vulnerability of CD-R carriers to sunlight, and to emphasize that an inadequate choice of discs, careless handling and storage, and inadequate testing can quickly jeopardize previously recorded archival material, or even lead to its loss.

Smaller audio archives, and research audio archives in particular, are usually inadequately aware of the vulnerability of CD-Rs and, because of insufficient professional staff, inadequate technical knowledge and equipment, excessive work load and permanent financial difficulties, do not place enough importance on the correct manner of storage and handling of digital carriers. The Institute of Ethnomusicology in Ljubljana therefore performed a simple experiment with the aim of demonstrating the susceptibility of CD-Rs to sunlight. Already known from technical literature, this might present a serious difficulty that tends to be greatly underestimated when CD-Rs are handled or put into storage. The experiment takes into account everyday, realistic and thoroughly possible circumstances found in research institutions with audiovisual collections.

Before the results of the experiment are presented, general characteristics of the CD and CD-R, as well as of the digital format used on them, need to be mentioned in order to understand the impact of the environment on these optical sound carriers.

General Characteristics of the CD

CD is an acronym for the Compact Disc, an optical disc with digital recording. It was first introduced in 1980 by Philips and Sony, and standardized in 1982. Initially, the CD was intended to replace the wide-spread vinyl discs (LPs), which were extremely popular and wide-spread sound carriers at the time.

Writing on the CD is done by linear pulse code modulation (PCM) with the sampling frequency of 44.1 kHz and 16 bit resolution. The CD and digital

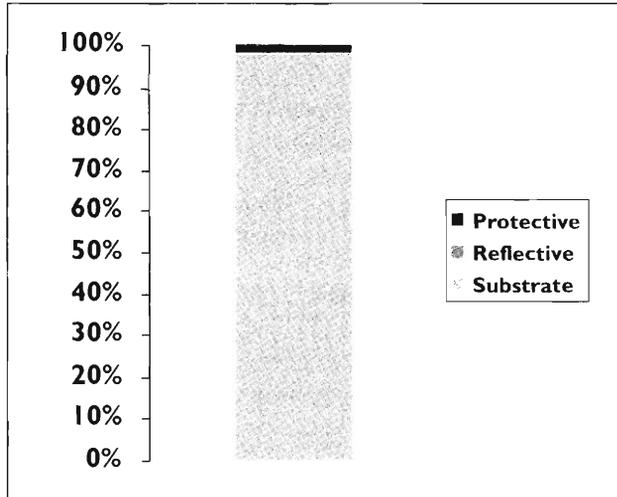
format on it are standardized by the IEC 908 standard, sometimes referred to as the Red Book standard after its red covers. Since it is possible to write data on the CD in various formats, a more accurate expression has been established for audio CDs: Compact Disc - Digital Audio (CD-DA).

Writing and reading data on the CD is a complex and complicated process, especially owing to high data density and the small size of record units. Data density on the CD is high; its ring width being 3.3 cm, it contains about 20,000 tracks. Hence, the surface equal to the thickness of a human hair (75 μ m) would contain about 45 tracks, whereas in a square millimetre there would be 1 200 000 bits. Taking this into account, a CD with 60 minutes of stereo music contains 5 000 000 000 audio bits and the number is even greater if you consider all the bits recorded (next to audio, there are also synchronisation, redundancy and other bits). Reading speed of audio bits is about 1 400 000 bits per second.

Writing is done when a CD is made; the data is recorded with pits that are pressed into the surface of the disc (land) and distributed in a spiral from the inside of the disc outwards. The CD is read by a laser beam with a wave length of 780 nm, which is reflected from the reflective layer. Pit depth (1/4 of the laser beam wave length) causes destructive interference of the beam reflection at the edge of the pit; beam reflection from the land being out of phase and reflection from the pit in phase. The reflection of the beam is thus perceived either as the digital '1' at the edge of the pit, or as the digital '0' anywhere else [1].

The CD consists of three basic layers: substrate, reflective layer and protective layer. Substrate is made of polycarbonate (stable polymer plastics) and is about 1 200 μ m thick, making it the predominant layer of the CD. The reflective layer is very thin (0.02 μ m) and is usually made of gold, silver, aluminium, or some other metal that provides good and constant laser beam reflection. The reflective layer is protected by the 10-20 μ m thick protective layer. Owing to the relatively thin protective layer, the CD can be easily damaged on its upper side.

Figure 1: Thickness of substrate, reflective layer and protective layer in CD structure. Reflective layer is too thin to be visible in the picture.

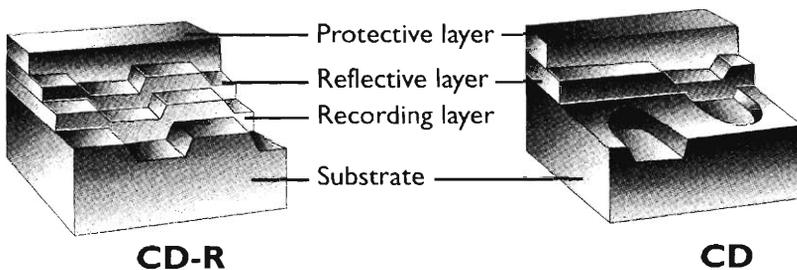


CD-R, a Different Kind of Medium

CD-R is the short form of CD-Recordable, an optical disc which can be written on once and then read from many times. This is why it is also called the WORM (write once, read many). It was launched in the early nineties and is defined by the Orange Book standard. Nowadays, CD-R is very popular for various reasons: its relatively high storage capacity (650-700 MB) and very low price, low price of the recording equipment, and widespread replay equipment (most ordinary CD players can replay CD-Rs as well). Since the contents cannot be deleted from the CD-R, it seems ideal for archival purposes.

Although CD-R has the same shape and dimensions as the CD, and can even be read in the same way and by the same equipment, it is nonetheless a different medium. It has an additional layer that enables recording, called the recording layer or dye. This layer is vital for performance, susceptibility and lifespan of the CD-R, which distinguishes it from the CD.

Figure 2: Structure of CD-R and CD



Writing on the CD-R is done by a laser beam of the same wave length as that used for reading, except that it is approximately ten times more powerful (4-8 mW). The recording layer is photosensitive and is therefore heated to 250-300°C by the recording laser beam. The exposed area melts and is deformed, which changes the reflection characteristics for reading. The result is similar to pits on CDs. The recording layer or dye is made of organic material and is a highly sensitive and vulnerable part of the CD-R. Usual dye types are cyanine, AZO and phthalocyanine. Their life expectancy under good storage conditions is believed to be about 100-200 years. However, manufacturers experiment a lot, especially with dyes and reflective layers, in order to decrease manufacturing costs and to increase writing speed. To them, CD-R stability and lifespan are becoming less important.

Digital Recordings on CDs and CD-Rs

Recordings on CDs and CD-Rs, which are defined in the Red and Orange Book standards, are rather complicated; the procedure is not merely simple coding of audio data represented by a binary form of '0' and '1'. Data is grouped in blocks, 24 bytes per block. Blocks are then further joined in frames, 98 blocks per frame. A block has 192 audio bits, but because of the additional synchronisation, code, parity etc, the total number of bits per block is 588. Seventy-five frames are read per second; in other words, 7 350 blocks per second. [2]

Owing to high data density and large quantities of bits read each second, error frequency in reading the data is high. That is why special algorithms are included in the writing and reading process, which enable detection of errors and attempts to correct them. Error detection and correction are done in different ways, such as adding parity bits, displacing data before recording (interleaving), Eight to Fourteen Modulation (EFM) and interpolation. An error detection and correction system can successfully detect and correct a certain number of errors per second without any audible consequences. When there are more errors than that, or when they are grouped (burst errors), the system can no longer correct them successfully and the data is lost for reading. They can be replaced, or covered up by interpolation, a procedure based on mathematical guessing that predicts the value of the missing data. It does not, however, correct the errors; it merely guesses what the missing parts could be. Consequently, the result is no longer the original recording but its more or less satisfactory approximation.

Error correction is done at various levels and degrees. Usually, three parameters are observed at the first level (E11, E21, E31) in order to establish how many blocks containing one, two, or three errors were detected and corrected. The parameters at the second level (E12, E22, E32) are similar, with the exception that three errors in the same block cannot be corrected. Therefore, the E32 error type is uncorrectable and should not be present on the CD, if the replay of its contents are to be intact.

CD recording quality can be estimated from the number of blocks containing errors of any kind. The estimate is called the block error rate (BLER) which is the sum total of E11, E21 and E31 per second. According to the Red Book standard, the error detection and correction system is successful if the number of blocks containing errors is less than three per cent. With 7 350 blocks per second, this means BLER should be less than 220. The same standard tolerates up to seven consecutive blocks containing errors (burst error length, BERL <7) and no uncorrectable errors (E32 = 0). When these values are exceeded, the sound carrier is corrupted and problems in replaying it are expected. Furthermore, the proposed parameter limits for carriers used for archival purposes are still lower.

The Susceptibility to Sunlight Experiment¹

It was the aim of the experiment to establish how various CD-Rs are affected by their exposure to sunlight. Several samples of identical CD-Rs, which were of different makes and price ranges, were bought from different manufacturers. CD-Rs contained two principal dye types, cyanine and phthalocyanine, and had different reflective layers. After purchase, all the samples were recorded on the same professional stand-alone CD burner in the CD-DA format, in accordance with the Orange Book standard, which can be read by the Red Book-compliant player. The experiment was first conducted in July 2000 and repeated (and updated) in 2001. In 2001, some brands of discs were exposed to sunlight again and some new CD-Rs were added.

After the CD-Rs had been recorded, they were marked on the plastic inner (unrecorded) hub, and measured by the CD Errormonitor. A CD Errormonitor is specialized error collection software running on a standard PC and hardware connection that is connected to a CD audio player with a Sony error correction chip. This measures Block Error Rate (BLER), Burst Error Length (BERL), uncorrectable errors (E32) and several other error parameters, enabling reliable monitoring of a CD's error condition. Although it does not allow error analysis, it does allow detection of those errors. A professional studio CD player was used as a CD player with the built-in hardware connection for CD Errormonitor.

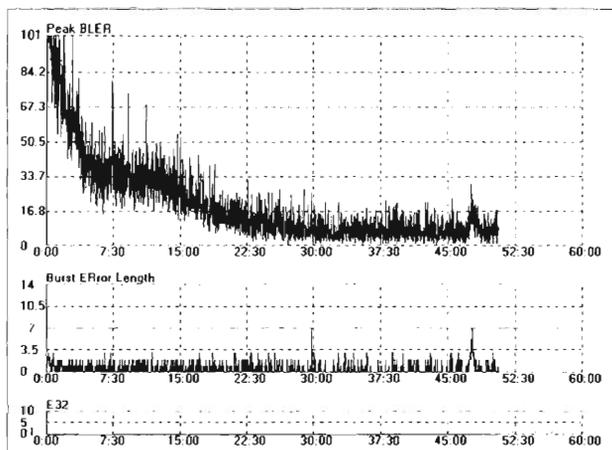
Once measured, the CD-Rs were then stored in different locations (each copy of the same kind of disc was placed in a different location), and exposed to different conditions. In the paper, some of the most typical brands of CD-R used in the experiment are discussed. For easier understanding, the discs are labelled A, B, C, D and E.

Discs A are inexpensive, multipurpose CD-Rs with cyanine dye and a silver reflective layer. Owing to poor manufacturing, or perhaps to insufficient compatibility with our CD burner, even the very first measuring revealed a comparatively high average

¹ see also [3]

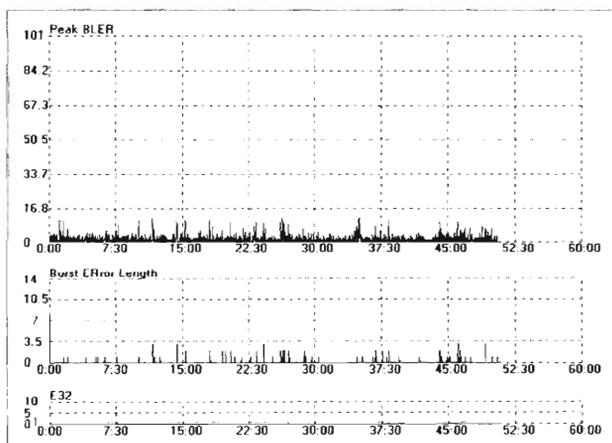
BLER (around 30.0). Nevertheless, peak BLER was within the Red Book fail level standard of 220. The first measuring did not detect any E32 errors, nor was it possible to detect any audible errors during the playing.

Figure 3: Results of the first measuring of disc A



Discs B are similar multipurpose cyanine dye discs with a silver reflective layer, but they were made by a well-known manufacturer and are somewhat pricier. The first measuring revealed no particularities; their average BLER was around 1.0. It may be said that of all the discs used in the experiment, this brand of disc represents average quality.

Figure 4: Results of the first measuring of disc B



Discs C are the only CD-R Audio discs, and are therefore the most expensive. These discs have phthalocyanine dye and a silver reflective layer. Their extreme

reliability is guaranteed by the manufacturer, even if they are exposed to direct sunlight out of doors for more than 100 days. The first measuring resulted in an average BLER of around 1.8 with no special peculiarities.

Discs D are of the same kind and have equal characteristics to discs A, but are made by a different manufacturer. They were used for the test repeated in 2001 since discs A were no longer available. With average BLER around 1.1 at the first measuring, they turned out to be much better than discs A.

Discs E have the phthalocyanine dye and a gold reflective layer, are in a higher price range, and intended for different use. The first testing indicated the lowest average BLER of all the discs tested (around 0.3). The rest of the tested parameters were among the best as well.

In order to simulate the real-life environment in which CD-Rs are handled in everyday work situations, the tested discs were placed around the office; several other samples were placed in a vehicle and exposed to direct sunlight behind the windshield.

The discs were measured and monitored at regular intervals. Before each procedure, the disks were wiped carefully with a soft dry cloth to eliminate dust and any impurities. Owing to the large number of discs used in the experiment, those CD-Rs that were expected to manifest faster and more obvious changes in error conditions were checked more often.

Several months of monitoring and measuring the discs revealed that some of them were very susceptible to sunlight and the conditions to which they were exposed. Taking into account the different locations they were placed in, the manner in which they were exposed, and their different brands, the results varied considerably.

Experiment Results

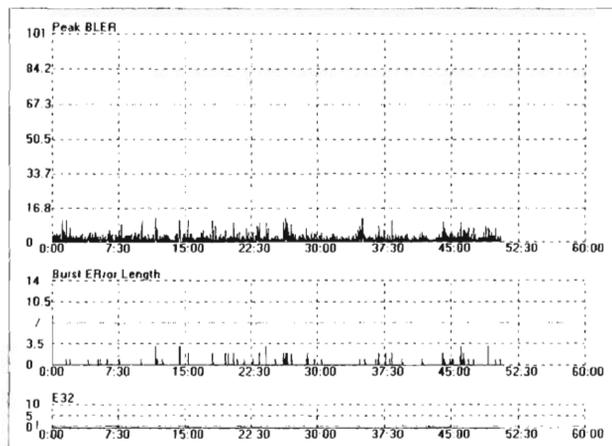
Measuring BLER, BERL and E32 in discs used in the experiment clearly indicates that by monitoring these parameters, changes in the data quality can be detected. Although average and peak BLER do not correlate directly with other measured parameters [6], monitoring them is a relatively adequate indicator of error conditions and susceptibility of a disc, and is therefore recommended for basic control of the condition of discs [7]. According to our measurements, peak and average BLER went up at first, as the time of exposure increased, but began to decrease after they had reached a certain limit – despite the fact that the disc was still exposed to light and that its general condition had begun to deteriorate. That is why other parameters, such as BERL and E32, proved to be better indicators of the general condition of the more ‘damaged’ CD-Rs.

CD-Rs Stored in the Archives

Immediately after the first measuring, a sample of each brand of disc was placed in its box, closed, and stored in a room in the Institute's archives with no daylight and a controlled temperature ($20^{\circ}\text{C} \pm 1^{\circ}\text{C}$) and relative humidity ($50\% \text{ RH} \pm 5\% \text{ RH}$). These discs then served as reference samples during the experiment.

The error condition of the discs that had been stored in the archives remained almost unchanged. Three years later, the values and occurrence of the BLER, BERL, and E32 stayed almost identical to the ones obtained at the time of the first measuring. When stored in the archives, minor aberrations between individual BLER measurements occurred only on disc A. Since initially they had not been recorded precisely, they were less reliable. Other error conditions of the disc A, however, remained unchanged.

Figure 5: Results of measuring the disc B after a three-year storage in the archives

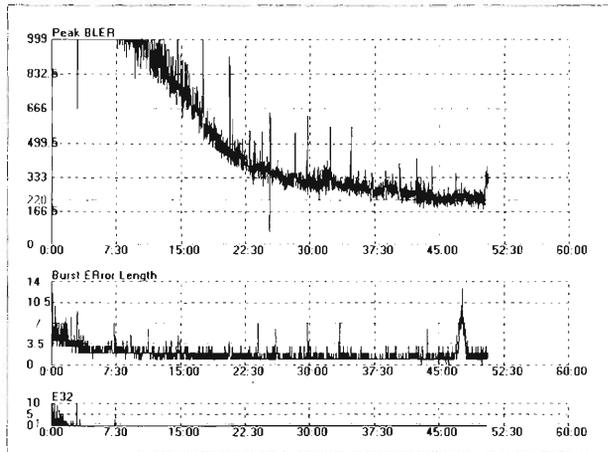


CD-Rs Not Exposed to Direct Sunlight

Several of the recorded and measured discs were placed in their boxes, which were left open, so that the upper, unrecorded side of the disc was exposed. They were then positioned around the office but not in direct sunlight. The CD-Rs were thus exposed to normal light in the office (which is occasionally also lit by neon and ordinary sources of light) and to its everyday climate conditions.

After a year, most of the discs exposed in this manner exhibited no susceptibility to light. The only exception was disc A which, as time passes, exhibits a gradual increase of average BLER and total E32 count. Exposed in this manner for 14 days, the disc exceeded the permissible peak BLER by far; there was also an increase in the E32 errors. After 30 days, there was a substantial increase in the average BLER and total E32 count, which denoted that the disc had become useless even though there were no audible errors yet when it was played.

Figure 6: Results of measuring disc A after 30 days of exposure to no direct sunlight



CD-Rs Exposed to Direct Sunlight

These discs, left in their open boxes and placed on a desk by a window, were exposed to sunlight for several hours daily. Since the window faces south-east and several buildings are nearby, the discs were in the sun only in the morning. The longest that these discs were exposed to direct sunshine was in June and July, around the summer solstice (up to three hours). In May and August, they were in the sun for about two and a half hours; in September and October less than two hours; for the rest of the year they were exposed to direct sunshine for less than an hour a day, or were not directly exposed to sunlight at all. Of course, the exposure was largely dependent on current weather conditions. Except for the time needed to air the office, the window was closed. The discs were thus exposed to regular working and climatic conditions in the office, and were also exposed to the heat of the sun.

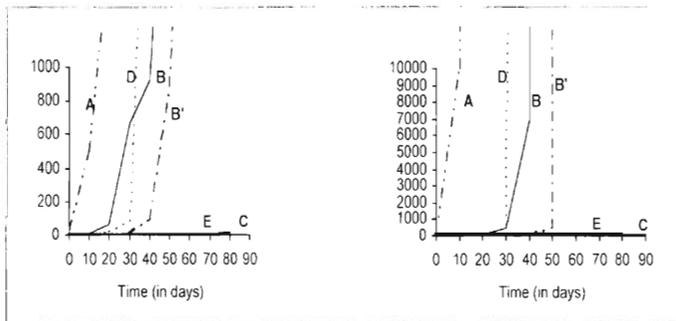
In these circumstances, CD-Rs were tested in two different ways: some of them were turned the way they are usually stored in their boxes (the unrecorded side facing upward); the rest were turned in the opposite direction, the recorded side facing upward, directly exposed to sunlight and sunshine.

Exposed to this kind of light, the discs turned out to be the most sensitive and vulnerable, and the differences between individual discs became clear. Owing to extremely rapid changes, some of the discs could not be measured often enough and they manifested significant and sudden changes of error conditions. The change on the discs that had been exposed with their recorded side facing upward was especially striking.

Recorded Side Facing Upward

Disc A exhibited extreme vulnerability to such exposure. After 20 days, the average BLER increased from 17 to 1 664 and the total E32 count from 139 to 6 800 000. The disc was very difficult to play, and the recorded music was almost unrecognizable. Five days later, the disc was completely destroyed, and could not be recognized by the CD player, which sent the "No Disc" message.

Figure 7: Average BLER changes and the changing of the total E32 count on discs A, B, B', C, D and E after their recorded side had been exposed to direct sunlight

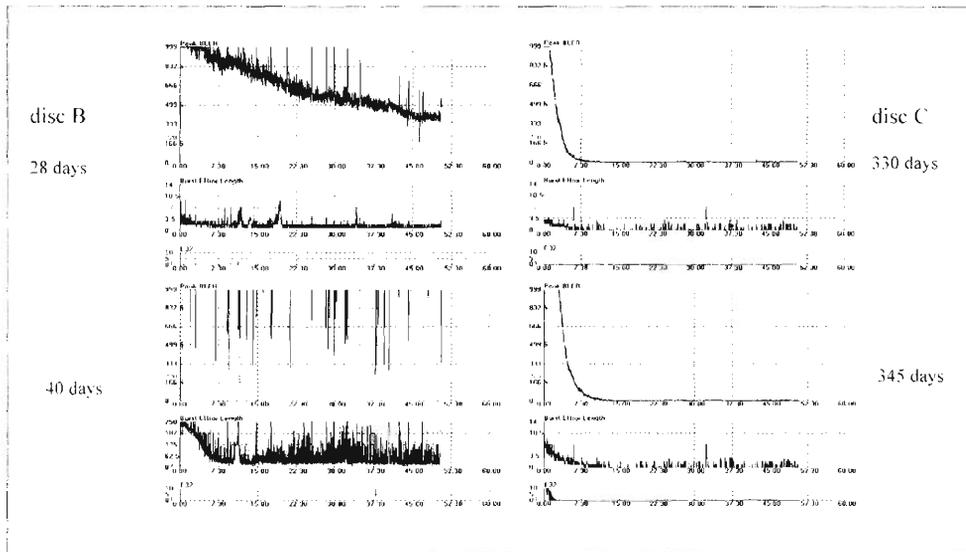


The measuring was repeated on disc D in 2001. Despite the fact that the changes on this disc occurred more slowly, this disc exhibited similar results to disc A. After a 30-day exposure, the peak average BLER exceeded the limit of 220, and six days later, there were clearly audible errors when the disc was played. After a 50-day exposure, the disc was destroyed completely.

Disc B underwent similar changes, only more slowly than disc A. After a 25-day exposure the peak and average BLER rose above the limit of 220, and three days later the first E32 errors occurred. These parameters worsened rapidly, and around day 40 the first audible errors appeared and became increasingly disturbing in the following days. Disc B was measured again in 2001. The results were very similar to the previous ones, but the increase in errors was somewhat slower initially. The peak BLER exceeded the 220 limit around the 40th day of exposure, and the first obvious, audible errors occurred around day 55.

Disc C tested extremely well. In the period when other brands of discs had been completely destroyed, the measured parameters on this disc remained constant. It was only after almost a year's exposure that its average BLER began to increase. There is an especially high peak BLER increase at the beginning (near the central disc hub) of the recording, which is where changes first occurred on other discs as well.

Figure 8: Results measured on discs B and C after their recorded side had been exposed to direct sunlight

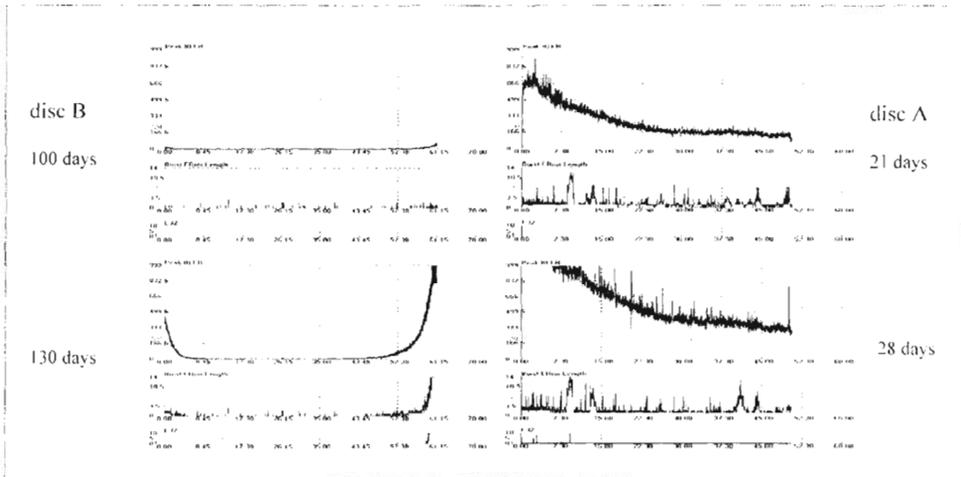


Disc E also tested fairly well. It has been exposed only since April 2001, but displays only a slight increase of the average BLER from 0.3 to 3.3 after more than 70 days; other parameters remain unchanged.

Recorded Side Facing Down

The discs used in the experiment were less vulnerable to this kind of exposure. Most of them exhibited slower changes in the measured parameters. Discs B, D and E have been exposed in this manner only since April 2001. After more than 70 days of monitoring, discs B and E do not exhibit any error changes, while disc D shows a slight increase in the average BLER (from 0.8 to 1.5); this is mainly a result of the increase in the peak BLER at the beginning of the recording (near the central hub of the disc), which is where the first results of exposure usually appear. Disc A is the only one deviating from these measurements to a certain extent. Namely, its peak BLER exceeded the 220 limit already after 25 days of exposure, and the first E32 errors appeared around day 30. But after 130 days of exposure of disc B, representing CD-Rs of average quality in the experiment, the increase in the measured parameters is considerable.

Figure 9: Results measured on discs B and A after their unrecorded side had been exposed to direct sunlight

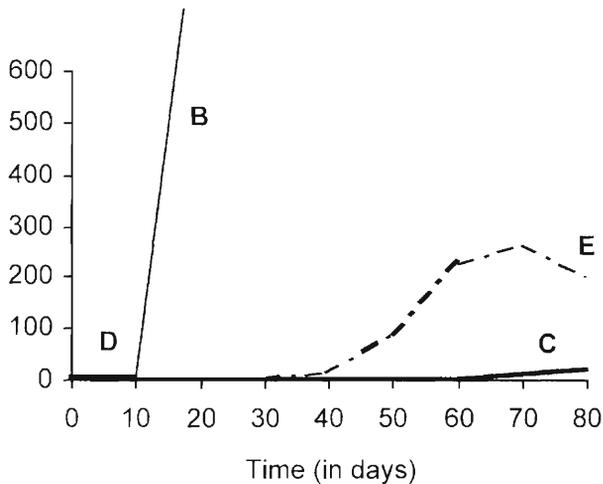


Discs Exposed to Direct Sunlight in a Vehicle

Some of the CD-Rs were exposed to more extreme conditions: they were placed in covered boxes with their paper jackets taken off, and positioned on the shelf below the rear car window. The car was parked mostly in the east-west direction, partly in shade; the discs were therefore exposed to direct sunlight up to half a day (either in the morning or in the afternoon). Since they were exposed to higher temperatures, the disks warmed up considerably, which is also evident from minor deformations on the plastic disc boxes.

Owing to the more extreme conditions these discs have been subjected to, they display the fastest changes in the measured parameters. In this manner, the discs B, C, D and E have been exposed only since April 2001. Since most of them were turned with their recorded side facing upward, the results are similar to those from the same kind of exposure in the office, with the exception that the parameter changes were generally more obvious and occurred more rapidly. Disc B, for instance, did not exhibit any changes after 11 days, but a mere 15 days later (after 26 days of exposure) it was already completely destroyed and unreadable. Similarly, disc D did not exhibit any changes after 7 days but was completely destroyed and unreadable 10 days later (after 17 days of exposure). Results of discs C and E are far better. Even after more than 60 days of exposure, disc C does not yet exhibit any error changes. In the following 20 days (after 80 days of exposure), the average BLER increased from 0.9 to 16.8, while the peak BLER had not yet exceeded the 220 limit. Disc E exhibited a more perceptible and faster increase in the average BLER as time passed, and a slight increase in the BERL. The total E32 count increase had not been detected after 80 days of exposure.

Figure 10: Average BLER changes on discs B, C, D and E after exposing their recorded side to direct sunlight in a vehicle



Conclusion

Laboratory tests of CD-R susceptibility to sunlight carried out by other institutions (i.e. [4]) have shown similar results. Based on the experiment, the following main conclusions can be drawn. Different CD-Rs have different vulnerability to sunlight and are the most susceptible to direct sunlight. CD-R's error condition depends on the side of the disc that has been exposed to sunlight. The increase in the measured errors is uneven: during the initial period of exposure, the discs usually do not manifest any marked error conditions, but once the changes start to occur, the BLER increase is generally very rapid, and is soon followed by an increase in the other measured parameters. The first and strongest deformations usually appear at the beginning of the disc (near its inner hub) but may also appear at its end (the farthest from the inner hub). None of the discs stored in the archives displayed any changes in error conditions even after three years.

Figures 11 and 12 illustrate the susceptibility of two brands of CD-R to exposure to direct sunlight in different exposure conditions. They both illustrate the difference between individual discs and between different kinds of exposure. After having been exposed in a vehicle, for instance, disc D was totally destroyed and impossible to read after 20 days of exposure, whereas disc E, which had been exposed in identical conditions, stayed almost within the permitted aberrations even after 80 days, which is four times longer. After having measured both discs, it also became clear that exposure of a disc's recorded side leads to its disintegration (disc E exhibited an excessive increase in BLER and in other measured parameters, while disc D was destroyed completely); exposure of the unrecorded side within the same time frame, however, affects the error condition of a disc only insignificantly.

Figure 11: Average BLER changes on disc D after exposure to direct sunlight and after exposure in different locations

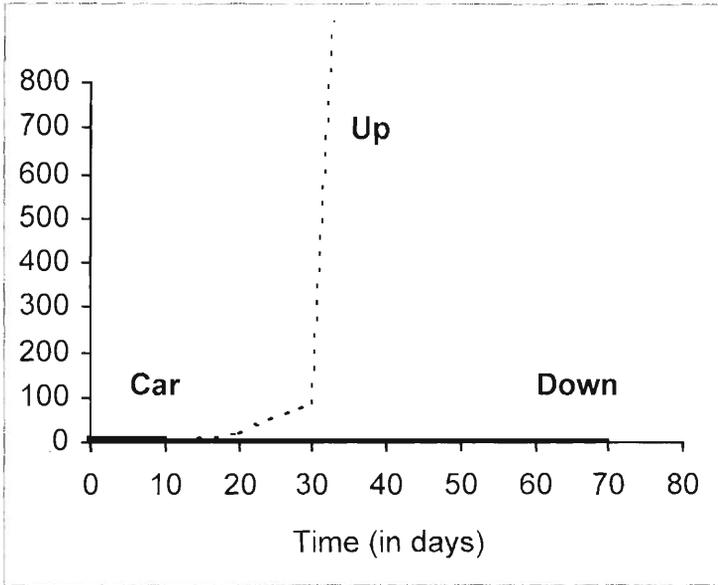
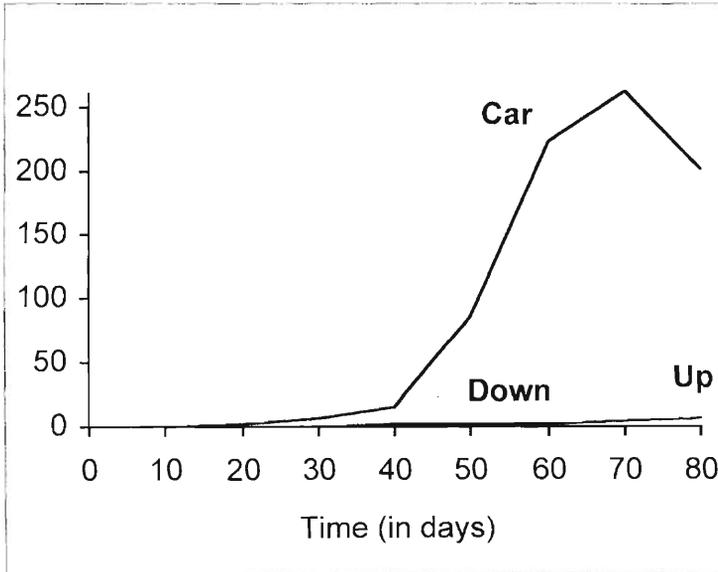


Figure 12: Average BLER changes on disc E after exposure to direct sunlight and after exposure in different locations



It can be concluded that the appropriate handling and storing of CD-Rs plays a vital role in their life expectancy. This is true of all kinds of CD-Rs. Even though their manufacturing technology has reached a high level and manufacturers guarantee good resistance to light, the differences among individual brands and kinds of CD-Rs are considerable [8]. Furthermore, CD-Rs were initially not intended for professional use, which is why reliable, high quality discs are hard to find. Our experiment illustrates that it is essential for discs to be exposed to light as little as possible, especially to direct sunshine, and that their recorded side should not be turned upward; some brands of disc may be damaged even after several days of exposure. Although some other discs, which are more resistant to light and sunshine, may not seem to be affected even after a longer period (a year, for instance), the process of disintegration, once it starts, develops very rapidly. Regular measuring and monitoring of CD-Rs is therefore crucial. It enables timely detection of possible error condition changes on a disc, and the data recorded on the disc can be transferred to another carrier [9]. Only when properly handled and adequately stored in suitable archives may a CD-R be guaranteed its longest life expectancy.

This experiment, along with many others that have tested digital media, carriers and formats, has shown that digital carriers and digitally recorded data on them can be highly vulnerable and unstable. Consequently, sound and audiovisual archives have to be aware of the dangers and pitfalls of the digital technology, and conduct the digitisation of their collections with caution and consideration. Merely saving the material in a digital form does not automatically mean it is adequately protected.

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Tondokumente aus dem Phonogrammarchiv der Österreichischen Akademie der Wissenschaften/Sound Documents from the Phonogrammarchiv of the Austrian Academy of Sciences; Gesamtausgabe der Historischen Bestände 1899 – 1950/The Complete Historical Collections 1899 – 1950.

Series 5: The Collections of Rudolf Trebitsch.

General Editor: Dietrich Schüller. Verlag der Österreichischen Akademie der Wissenschaften 2003.

5/1 Recordings from Greenland (Kalaalit Nunaat) 1906 (OEAW PHA CD 13),

5/2 Celtic Recordings – Ireland, Wales, Brittany, Isle of Man, and Scotland (1907 – 09) (OEAW PHA CD 14),

5/3 Basque Recordings 1913 (OEAW PHA CD 15).

In the series *Sound Documents from the Phonogrammarchiv of the Austrian Academy of Sciences – The Complete Historical Collections 1899 – 1950* a new complex was published recently. It is a three-volume edition focusing on the collections of the Austrian physician and anthropologist Rudolf Trebitsch, vol. 1 comprising recordings from Greenland made in 1906; vol. 2 comprising Celtic Recordings from Ireland, Wales, Brittany, the Isle of Man, and Scotland collected between 1907 and 1909; vol. 3 the Basque Recordings of 1913.

Reissuing of the Trebitsch material was often requested; one can easily imagine, however, that this publication has been one of the most difficult projects the Vienna Phonogrammarchiv has ever undertaken.

Continuing the high standard set in its earlier publications of the Vienna Phonogrammarchiv, every volume comprises the complete historical sound recordings on CD, the original protocols as image files on CD-ROM, and a comprehensive booklet providing comments, texts, maps, illustrations, references, and music transcriptions. Thus, the common link for all the recordings in this series is the collector, but the material recorded, language as well as music, is very diverse regarding region, technical quality, background information, content and historical value.

Conditioned by the diversity of the collected material, specialists had to be found for every region presented – Greenland, Celtic, and Basque - who comment on the material from the contemporary point of view. The guiding principles of the edition, the General Editor Dietrich Schüller's preface, and the introduction of the executive editor of the series Gerda Lechleitner, are found in the same or slightly different form in all three volumes. The difficult task of bringing together such diverse material as language and music recordings from three entirely distant regions has been solved in an excellent, admirable way.

The collector Rudolf Trebitsch (1876 -1918) originated from a wealthy Jewish family, which enabled him, after studying medicine, to devote his life to

anthropological and linguistic studies. He travelled to Greenland in 1906, to Celtic areas in Northwest Europe between 1907 - 1909, and finally, in 1913, to the Basque region in order to record samples of language and music. During World War I he was called up to serve in the Austrian army as a medical doctor, but was not up to standard and committed suicide shortly before the end of the war.

Trebitsch was an enthusiastic amateur anthropologist, traveller and collector. His expeditions were carefully prepared, executed, documented and followed by publications. Thus, the material collected on the above three expeditions comprises more than 240 recordings, including documentation. It was a wise decision to divide the material according to the region, and to present the recordings in historical order. This arrangement has the consequence that language and music recordings are divided. However, music recordings never had priority during Trebitsch's expeditions; his main interest was to document the languages and dialects that, in his opinion, were threatened with extinction. It is, however, interesting to learn that the texts were written down prior to the recording and never recorded spontaneously.

The many aspects of the recordings presented here allow historical, ethnological, linguistic, and musicological access. The specialists providing commentaries on the three volumes are from different backgrounds, and they approach the historical recordings in their own way.

The recordings from Greenland are presented here on two CDs (vol. 5/1). In his introduction Michael Hauser, a well-known Danish ethnomusicologist, gives an overview of the history and process of the Austrian expedition, and the recordings made by Rudolf Trebitsch and Gustav Stiasny. Hauser refers extensively to music, mostly songs, which represent most of the Greenlandic recordings. Much time and effort have also been invested in the texts, which are introduced by the Greenlander Arnaq Grove. Besides the original protocols, all the texts are also given in new transliteration and full translation. The recordings from Greenland are especially interesting to ethnomusicologists, since they allow insight into the song repertory and performance practice around 1900. Among them are also unique examples such as the oldest recordings of drum songs.

The Celtic recordings, the most comprehensive collection, comprise three CDs. The introduction by Ulla Remmer, a linguist and specialist in Celtic languages, who at the same time served as co-editor of this volume, refers mostly to the language recordings. The assumption that the Celtic languages were on the edge of extinction led Trebitsch to undertake three successive expeditions to the Celtic-speaking areas in Europe: in 1907 to Ireland and Wales; in 1908 to Brittany; finally in 1909 to Wales again, the Isle of Man, and Scotland. Besides examples of folk music, the recordings include voice portraits of famous personages and different examples of texts that give an insight into the patriotic and language-revival movements of the time.

Trebtsch was not a linguist, but obviously well prepared and guided by local authorities. His collection of Celtic recordings presents an extraordinary variety of examples, among them the oldest sound documents preserved today. The diversity of the languages and dialects found in the Celtic recordings required several specialists to do transliteration and translation of the original texts.

The third volume, devoted to the Basque region, comprises two CD recordings made in 1913 in France and Spain. The introduction, written by the linguist Bernhard Hurch from Vienna, stresses the importance of the linguistic recordings, which were taken rather more systematically than the Celtic ones. Again Trebtsch recorded the voices of various important figures of the Basque cultural life, various dialects, and folk music. Owing to historical and technical circumstances, most of the music recordings are found today only on wax cylinders preserved in Berlin. It therefore remains the task of the Berlin Phonogramm-Archiv to publish the music recordings, such as the Basque cry *Irrinzina* and recordings of the Basque musical instrument *alboka*. In contrast to the other two volumes, the text of the recordings is given fully in the original Basque language, but only with a short summary in English.

Most of the recordings were made with the Reisephonograph, a machine based on the Vienna Archiv-Phonograph and developed specially for expeditions by the Vienna Phonogrammarchiv technician Fritz Hauser in 1905. The Reisephonograph was still very heavy (15 kg) and difficult to handle, but made for better recording quality than the smaller Edison-Phonograph, which was taken on the expeditions to Greenland, Ireland, Wales, and the Basque region. It was an agreement between the Vienna and Berlin Phonogramm-Archives that language should be recorded with the Archiv-Phonograph, music with the Edison-Phonograph. The wax cylinders have been galvanized and copied, in Vienna a special machine was invented for copying cylinders to discs. Wax cylinder copies of the music recordings were sent to the Berlin Phonogramm-Archiv and provided by Trebtsch himself, with documentation and correspondence, which documents the long lasting good co-operation between the Vienna and Berlin Phonogramm-Archives.

When listening to the CDs, the different primary sources, 'Phonogramme' (discs) and wax cylinders, are hardly distinguishable from one another. It would have been helpful to mention the original sound carrier in the description of every track. According to the Vienna reissuing strategy (as pointed out in the guiding principles of the edition republished in every volume) signal processing has been used to a low degree only, so that the transferred sound documents resound as close to the original as possible. The experienced listener will soon be able to separate the noise from the content, be it text or music.

According to the General Editor Dietrich Schüller's preface *the intention of this edition has been to make the historical sound documents easily accessible.*

In contrast to the reissuing project of the Berlin Phonogramm-Archiv, the strategy of the Vienna Phonogrammarchiv is to present the historical sound recordings in their complete form. Thus, the main part of the publications is the primary source together with the primary information. The comments are intended to introduce the user to the historical setting and to draw his attention to special points of interest. Compared with the earlier Vienna publications in the series of Historical Sound Documents, for example the reissue of the Pöch recordings from New Guinea with the excellent introduction and comments by Don Niles, the collections of Rudolph Trebitsch require special attention owing to the extreme diversity of the material. Thus, the user of this comprehensive and dense three-part publication is faced with overwhelming information. However, in most cases only that volume of the series will be used in the region where the recordings originated. In this case it is justified to repeat information several times, for example technical details, or the biographical data of the researcher. The entire three volume reissue is a purely scientific one, intended for archives, research, and local authorities. Thanks to a long-lasting experience of reissuing historical sound documents, publication of the Trebitsch collections fulfils the high standard set by the Vienna Phonogrammarchiv as the norm for similar publications.

Review by Susanne Ziegler, Berlin Phonogramm-Archiv, Berlin

Dear Sir

Or why we don't have all that long to transfer our tapes.

In the editorial of the last IASA journal our president, Kurt Deggeller, quoted IASA TC03, *The Safeguarding of the Audio Heritage: Ethics, Principles and Preservation Strategy*, which calls for an unhurried strategy for the digitisation of analogue documents, and then claimed that as a result of the number of existing tape machines there would be sufficient spare parts and so we would have 50 years in which to transfer our analogue tapes. Unfortunately I think this seriously understates what is a very significant issue; as I write I hold in my hand a list of Studer parts, and even now many components are no longer available. By cannibalising equipment and using precious staff resources to maintain old tape machines, there is a chance we may be able to provide access to the individual tape, but we will not be able to provide continual production access to complete collections. The eventual scenario would be that a user comes to listen to the collection, and the aging analogue technician cajoles the fragile tape machine into replaying the selected tape, while wondering if the alignment is anywhere near accurate, but lacking the equipment to check. However, what we need is reliable production quality equipment that will consistently, and with minimal failures, be used to undertake the high volume transfer to digital of the heritage audio collections. That may be achievable now, but will not be possible in the future.

The IASA technical committee have found that one technician working only on tape transfer will efficiently digitise 600-700 hours of tape per year; even less if there are significant problems with the tapes. Higher rates can be achieved only by compromising the transfer process. This suggests that it will take many years for most collections to be transferred to digital, and so it will be necessary to ensure that replay equipment is reliably available at production quantities for the time it will take. For the collection I am responsible for, this is estimated as a 15-year task at the current level of staffing; 15 years in which our studios need at least four reliably working tape replay machines available every working day. No small task, even when parts are available.

The biggest risk to the analogue collections over that 15-year period will be maintenance of the analogue replay equipment. 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 dependant on availability of tape replay equipment. With a small number of notable exceptions, manufacture of reel tape recorders of any type has largely ceased, and manufacture of the professional archival standard tape recorders concluded a number of years ago. Consequently it is necessary to maintain existing replay equipment. Maintenance of equipment requires parts, and many of the parts that are no longer available have a shelf life; cannibalising old machines won't solve that problem.

I cite, as one possible example among many, the problem with older integrated circuits (IC). At a recent conference I was asked to provide a CV, and so, with regard to my technical qualifications, I stated that 'I was awarded them when CMOS was a new thing'. I thought it amusing because suddenly the building blocks of much of the technology I still considered new was now actually regarded as redundant; I was feeling old because technology was aging! Though amusing, at least to me, it nonetheless presages a serious problem for the archiving community in technological obsolescence which is different, at least in degree of complexity, from what is experienced in resolving. These tape machines are not the mechanical replay devices of the gramophone era, they are sophisticated electronic technology that we cannot replicate outside the factories that produced them.

CMOS, or complementary metal oxide semiconductor, is a widely used type of semiconductor. At the time I was a student of electronics we were all excited by the possibilities offered by CMOS, particularly its low power consumption, increased reliability, and the 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. So imagine the surprise I felt when I was told, by a long standing colleague whom we contract to undertake repairs to our tape recorders, that it might take a little time to get one working as 'those early CMOS are pretty hard to find', and old CMOS has a shelf life, it doesn't last forever.

The Studer A820 machines we are using have a voltage checking board that determines whether any of the voltage lines are in error, and if it finds an incorrect voltage, the machine is shut down to avoid either the machine running out of specification or the components being damaged. Being one of the beautifully made professional machines that are no longer made, the tolerances are very tight and until recently it ran perfectly. However, aging CMOS components mean the machine often shuts down just because the sensing circuits are not working properly. Parts are available, but they are less easy to get than they were, and you can't expect to swap it with other machines as they will be just as old. I predict it won't be long before I will not be able to buy the particular CMOS components in their current form, and equivalents will require modification of the circuit boards. These circuit board components are generic, so it will be even more difficult for the proprietary parts that every manufacturer needs to make, and which are being depleted quickly.

The use of a recently made professional tape recorder is required because domestic machines, and even many old professional machines, fail to meet specifications. As TC03 states, *Optimal retrieval of the signal on historic recordings can only be achieved by modern, well maintained replay equipment, ideally of the latest generation, in order to keep replay distortions to the absolute*

minimum. Though there may have been millions of machines made, most did not survive, and most of the machines that have survived are not fit for replay of heritage collections. I strongly suspect that if we take account of the vast collections of tapes that exist, as evidenced by PRESTO or even IASA's own survey of endangered carriers, there may not be enough machines in the world to replay them all.

I haven't even begun to consider the non-standard analogue technologies that have lost support, or the existing digital carriers such as DAT, which is rapidly disappearing from the shelves and catalogues. Where will we get parts for these?

There are not 50 years left for replay of tape recorded collections; obsolescence of the technology will make the tapes inaccessible much sooner than that. Commercial enterprises that depend on this technology, and tape machine manufacturers who support it, predict a reliable life of a tenth of that.

Though, as TC03 states, *a cautious, unhurried strategy for the digitisation of analogue documents and the refreshing or migration of digital documents is recommended*, it also asserts that 'priority should be given to those analogue documents, which are:

- at immediate risk, and/or
- part of a commercially unsupported system, and/or
- in regular demand.'

Analogue tapes are at immediate risk and part of a commercially unsupported system. Sound collections should begin their cautious, unhurried digitisation strategy very soon, or the task will become much more difficult, if not impossible.

Kevin Bradley, National Library of Australia

Dear Editor

Copyright and traditional culture

At the 2003 IASA conference, Wend Wendland of the World Intellectual Property Organisation presented an interesting paper on *Cultural Heritage Archives and Databases, Intellectual Property and the Protection of Traditional Cultural Expressions* (see IASA Journal no. 22). In his paper, Wendland notes that *indigenous peoples and other traditional communities have long argued that their traditions... are under threat from a variety of sources*, and furthermore that the concept of public domain should not be applied to traditional cultures.

I am sure all archivists have great respect for the traditions of indigenous people. There are also many documented examples of how the rights of traditional artists have been abused. In their book *Big Sounds from Small Peoples*, Wallis and Malm (1984) illustrate cases of songs created by traditional artists being 'stolen' by European and North American performers, who have collected the income from those works. However, if we study these examples closely, we note that in most cases the works were already protected by copyright. The authors did not receive proper remuneration because of unfair contracts and the absence of proper administrative systems in their home countries. In other cases, countries have deliberately chosen to stay outside the international copyright conventions, and as a result their citizens have not been protected abroad.

In copyright law, 'public domain' refers to works that are so old their copyright has expired. Unlike works protected by copyright, which can be used only with the permission of the author and/or copyright owner, public domain works can be used freely by anybody. The English song 'Greensleeves', which probably dates back to the 16th century, is in the public domain. So is the music of Johann Sebastian Bach. Under current laws, the works of the Finnish composer Jean Sibelius will be in the public domain in 2028, when seventy years will have passed since his death.

Most countries today protect 'artistic and literary works' for the lifetime of the author, and for 50 or 70 years after his death. The concept of 'artistic and literary works' covers all styles and idioms - traditional, popular and classical - and in Finland the joiks of contemporary Sami songwriters, the indigenous people of Northern Finland, are protected just as the works of Sibelius are. The situation is, or should be, the same in all the countries that have signed the Berne Convention for protection of literary and artistic works.

As Wendland notes, current copyright laws do not protect traditional works, if they are in the public domain. If a Finnish singer records a traditional Sami joik, he does not need to ask anybody's permission, and the Sami people will

not benefit economically, even if the recording is a hit. This cuts both ways: if a Sami singer wishes to record *Greensleeves*, the English do not benefit, and if he translates the song into Sami, he can do so without anybody's permission, and his own translation is now protected by copyright.

Apart from economic questions, there have been other concerns about the misuse of traditional works. These works have been used in ways that are offensive to the traditional communities; there has been failure to acknowledge the source of tradition-based creation, etc. Should the concept of copyright be expanded to protect traditional public domain works? My argument is that extension of copyright laws to cover traditional works would create more problems than solutions, and it would be preferable to use specific *sui generis* legislation to prevent such abuse.

To explain my point, I have to get back to some of the basic concepts of copyright law. If copyright were to be expanded to cover traditional culture, the new legislation would somehow have to be adapted to these concepts. They are:

- the role of the author in copyright law
- the term of copyright
- the concept of publication
- the principle of reciprocity

Continental European copyright law was originally built around the concept of authorship, *droit d'auteur*. Artistic and literary works are protected because they are the creation of individuals, and law protects them just as it protects the life and physical property of individuals. With the passing of time, the concept has been modified, and modern copyright laws also include works 'created' by corporations such as film companies. From this point of view, it would be possible to expand the concept of authorship to indigenous peoples such as the Sami. However, copyright law assumes a one-to-one relationship between works and copyright owners.

Often traditional culture clearly belongs to one distinct group only, so technically it would not be a problem, if there is a body that can legally represent this group and administer its copyrights. However, there are numerous expressions of traditional culture, which are common to several groups of people. The Sami live in four adjacent countries: Finland, Sweden, Norway and Russia. In the first three they have representative bodies. Much of Sami culture is common to several countries. Who would own such expressions, and how would disputes of ownership be resolved? How about indigenous peoples without a representative body?

Another related question involves the scope of traditional culture to be protected by the proposed legislation. Implicit in Wendland's paper, but never stated clearly, is the idea that the traditional culture of Western industrialised countries would not be covered, with the exception of indigenous peoples such as the Indians and Inuits of America, and the Sami of Scandinavia.

Certainly industrialised countries have not asked for such protection. Copyright protection of all traditional culture would in practice mean perpetual copyright for all the works ever created: there is no point in protecting *Greensleeves* because the author is unknown, but leaving the works of John Dowland in the public domain.

If only the traditional culture of indigenous people were to be protected perpetually (works by living indigenous authors are already protected), what would be the criteria for inclusion? The United Nations has a definition of indigenous peoples, but there is no official list of such peoples. Indigenous peoples themselves have resisted the idea of a 'register'. If the idea of protecting traditional cultural expressions by copyright law were accepted, we would need an official list of indigenous peoples that are eligible for such protection.

In all the copyright laws today, the term of copyright is limited. In the European Union, protection currently lasts for 70 years after the death of the author(s). There are both theoretical and practical reasons for this. Theoreticians of copyright law agree that copyright has the potential to conflict with other important rights, especially freedom of information. This conflict is recognised in the Universal Declaration of Human Rights, where copyright and freedom of information are coupled in Article 27. The constitution of the United States goes so far as to grant Congress the right to pass laws on copyright *for a limited time only*. Various ways of extending the duration of copyright indefinitely have been discussed in copyright literature over the years, but they have usually been abandoned as impractical; one such solution was the French *domaine public payant*. When the European Union decided recently to extend the term of copyright from 50 to 70 years, Finland voted against this. Finland suggested that the problems caused by the longer term would far exceed the benefits.

From a practical point of view, the value of copyright normally declines with the passing of time. Real estate seldom loses its value, but relatively few works first published a hundred years ago still have any commercial value – with some obvious exceptions. In my daily work with the administration of copyrights, I have found how difficult it is to trace the legal owners of works whose authors passed away 50-60 years ago, unless considerable sums of money are involved. After two generations, the heirs seldom bother to keep track of the ownership of works that are no longer expected to earn much income. Yet the works remain in copyright, and if anyone wanted to reprint parts of them in, say, an anthology of historical source materials, permission from rights owners would be needed. Extending the term of copyright would inevitably create a large body of lesser-known works that are still protected legally, but whose owners have been lost.

Even corporations can disappear with the passing of time. It is often difficult to trace the legal representatives of corporations that ceased operations several decades ago. Over a long period, even some indigenous peoples

would regrettably disappear. Let us take the example of the Livonians, the indigenous people of Kurland (Western Latvia). Today, there are only a handful speakers of Livonian, and it is quite possible that in a few decades Livonian culture will be extinct. If copyright law had protected it, as suggested, who would inherit it? Would the rights go to the state of Latvia, or could any person with Livonian ancestors claim it? Over longer periods there will be population shifts. If traditional culture were given permanent protection retroactively, the problems would be immense. Who, for instance, would hold the copyright to the texts of the Bible?

The concept of publication is central to copyright law. An author has the exclusive right to decide whether he wants to present his works to the general public, and unpublished works have stronger protection than published works. Published works can be quoted without the permission of the author for scholarly purposes; unpublished works cannot until they fall into the public domain. Would traditional culture be treated as published or unpublished, as the term is understood in copyright law?

Copyright would not have much effect if it were limited to the country of origin. The works of Sibelius would be protected in Finland, but not in Sweden. Over the years, copyright has become practically universal, as most countries have joined international conventions such as the Berne Convention for the Protection of Literary and Artistic Works. According to Article 5 of the convention, *Authors shall enjoy, in respect of works for which they are protected under this Convention, in countries of the Union other than the country of origin, the rights which their respective laws do now or may thereafter grant to their nationals, as well as the rights specially granted by this Convention.*

The key concept here is 'national treatment'. Member states have bound themselves to give authors from other member states the same copyright protection as they give to their own citizens. If a Finnish company wishes to record a song by a South African composer, it has to obtain permission from the author or his representatives just as it would do in the case of a Finnish composer. However, states are quite understandably reluctant to give foreigners greater protection than their own citizens. For instance, US copyright law today protects sound recordings for 95 years, whereas in Finnish law the term is only 50 years. US recordings pass into the public domain in Finland after 50 years, just as local recordings do, although they may still be protected in their country of origin.

What would happen if some countries decided to introduce perpetual copyright of traditional culture into their legislation, as has been suggested? Such legislation would be valid in those countries, but according to the principle of national treatment, it would not be applicable in other countries, unless they decided to give similar protection to their own traditional culture. It might be possible to overcome this problem if all the countries could agree to protect the traditional culture of indigenous peoples only

and agree on a list of such peoples, but this looks like a remote possibility.

As one may gather from the above, I am sceptical about the possibility of protecting traditional culture by abolishing the idea of public domain in copyright. At least I would want to see some answers to the above questions, and a model of how the protection would work in practice. I think the purpose would be served better by introducing special *sui generis* legislation protecting specific aspects of traditional cultures, as has been done in some countries.

However, when it comes to protecting traditional performers, copyright law offers excellent possibilities for such protection, if we are satisfied with the term of 50 years, which non-traditional performers also receive. I will make my point by describing the protection performers already receive in Finland and many other European countries under current legislation.

In Finland, the copyright (or 'neighbouring rights') in a sound recording belongs jointly to the performers and the producer of the recording (usually a record company, but it could also be a sound archive, or even a researcher). The producer is not allowed to make a recording without permission from the performer. The law provides that in order to be eligible for protection, the performer must be performing 'an artistic work', but there is no requirement that the work performed should still be copyrighted. All the recordings of performances of traditional music, folk tales and other aspects of traditional culture are protected by copyright law for a period of 50 years, even if the works (songs, tales etc) themselves are in the public domain. Finland also grants the same protection to recordings made in other countries that are members of the Rome Convention. In copyright cases, contracts between performers and producers are interpreted narrowly. Even if an archive is the producer of a recording in a legal sense, it cannot publish it commercially without the performer's permission.

Not all the states give performers such wide protection. In many cases the 'neighbouring rights' in sound recordings are assumed to belong to the producer alone, which could create some of the problems Wendland notes. My point is that there is already a working model for the protection of traditional performers, if we are satisfied with a period of 50 years (or whatever time limit is chosen). If we insist on perpetual protection of traditional performers, we face the questions discussed above.

Pekka Gronow, YLE Sound Archives

Richard Green, IASA Vice-President, presents his Top Ten (Twelve)

12 of the Best from the Virtual Gramophone: Canadian Historical Sound Recordings

The Virtual Gramophone web site

(<http://www.collectionscanada.ca/gramophone/>) had its premier at the IASA conference in Paris in 1998. The site now has information on more than 11,000 titles, over 70 articles on Canadian music, musicians, and record companies and 3,300 complete, restored audio recordings in both MP3 and RealAudio formats. More information is being added on a regular basis. We are currently focusing on Canadian classical musicians in the 78-era.

The Virtual Gramophone provides an excellent sampling of musical life in Canada in the early decades of the 20th century - military band selections, fiddle tunes, parlour songs, novelty numbers, art songs and spoken word. For me, it has provided an opportunity to explore the history of recording in Canada and to discover hidden musical gems. Here are a baker's dozen of my current favourites. Enjoy!

13. *The Mason's Apron* – The roots of Canada's music run deep, but few genres have spanned the centuries and diverse regions of Canada as much as our fiddling traditions. There are hundreds of jigs, reels, quadrilles, hornpipes and waltzes to be found on the Virtual Gramophone, from the very first commercial recording ever made of traditional fiddle music, in 1917 by J.B. Roy, to this recording, done circa 1933 by George Wade and his Cornhuskers. (His Master's Voice 216569 www.collectionscanada.ca/obj/m2/f7/16445.mp3)

12. *The Maple Leaf Forever* – Although there are several recorded versions of this Canadian patriotic song on the site, the 1902 disc by Kilties Band intersperses an a cappella chorus among the instrumental sections. The words reflect a vision of Canada, with strong British links, that is definitely of the past. If you look at the label image for the Kilties version, you will see one of the rare "tartan" labels. (Berliner Concert Grand 5243 www.collectionscanada.ca/obj/m2/f7/7488.mp3)

11. *Maple Leaf Rag* – A great version of this Scott Joplin composition, by pianist Vera Guilaroff, recorded in Montreal in 1926. (Apex 758 www.collectionscanada.ca/obj/m2/f7/16764.mp3)

10. *Un Canadien Errant* – One of my favourite Canadian folk songs. There are five different recordings of this song on the site but I recommend the version by mezzo-soprano Eva Gauthier. She had a fascinating career that took her to the United States, Europe and Asia where she studied Javanese gamelan music. (1917, Victor 69311 www.collectionscanada.ca/obj/m2/f7/10331.mp3)

9. *Matrimony* – A guide to married life by the comic actress May Irwin. Irwin is best remembered for being the first to have an on-screen kiss in 1895. A link to the film clip is available on her biography on the Virtual Gramophone. (1907, Victor 5151 www.collectionscanada.ca/obj/m2/f7/7162.mp3)

8. *Vesti la giubba* – Edward Johnson had a notable career as the manager of the Metropolitan Opera in New York but, before that, he was a well-known opera singer who recorded primarily for Victor and Columbia. Most of his records are of sentimental songs and a few operatic works, such as this one from *Pagliacci*. (1919, Victor 64840 www.collectionscanada.ca/obj/m2/f7/17309.mp3)

7. *Life in the Trenches in Belgium* - There are four parts to this medley of songs and stories depicting life in the trenches during the First World War. It comes complete with sound effects! Gitz Rice, who partnered with Henry Burr in this recording, was a songwriter and a lieutenant in the Canadian army. The trench for this recording may have been located in New York but Rice had real experience of the war having fought at Ypres, the Somme, and Vimy Ridge where he was seriously wounded. (Columbia A2410 www.collectionscanada.ca/obj/m2/f7/10392.mp3)

6. *Dear Old Pal of Mine* – Gitz Rice's best known composition and a standard from the First World War was recorded by many singers including Irish tenor John McCormack. (Victor 1321 www.collectionscanada.ca/obj/m2/f7/10437.mp3)

5. *Shall I Have It Bobbed or Shingled* – This was actually the most popular song on the Virtual Gramophone in 2003, listened to more than 1500 times over the course of the year. A tongue twister novelty song recorded by Al Plunkett, a member of Canada's best known vaudeville troupe, The Dumbbells. (1926 Victor 216479 www.collectionscanada.ca/obj/m2/f7/11715.mp3)

4. *Gavotte in E major; Serenade in G major* (Bach; Arensky) This is a lovely recording by Canadian violinist Kathleen Parlow. Billed at the time as "world's greatest woman violinist," Parlow was a child prodigy who toured extensively and recorded 78s for Columbia, Edison, HMV and Nipponophone. (1914 Columbia A5588 www.collectionscanada.ca/obj/m2/f7/10295.mp3)

3. *Les Pompiers de St-Éloi* (The Firemen of St-Éloi) - Mary Travers Bolduc, «La Bolduc», was one of the most popular Quebec singer-songwriters during the Depression and her influence can still be found in contemporary Canadian music. Mme Bolduc was a controversial figure, following a lifestyle that conflicted with the conservative social norms of the day. Her songs, rife with local slang and double meanings, were often commentaries on Quebec society. This recording includes a final verse telling the local notables, the priest and the politicians, that her song was intended to be humorous and not to take offense. Though she would frequently add this verse to many

of her songs, when performing live in local community halls, this is the only recording to include it. This particular song also highlights her vocal improvisation skills, known as "turlutes" (mouth music or nonsense syllables). (1936, Starr 15978 www.collectionscanada.ca/obj/m2/f7/13921.mp3)

2. *Chicken Walk* - A fun number by the pioneers of the saxophone, the Six Brown Brothers. The Brown Brothers came to vaudeville out of the military band tradition and brought a unique style to the stage and to their records. This one has a real silent film quality and captures the era perfectly. (1916, Victor 18189 www.collectionscanada.ca/obj/m2/f7/10131.mp3)

1. *Cows May Come, Cows May Go, But the Bull Goes On Forever* - As anyone who has ever sat through one of my presentations on the Virtual Gramophone knows, this is my firm favourite. I think it is appropriate for all kinds of situations and it's a great performance too. It features the Peerless Quartet with Canadian tenor, Henry Burr. (1915, Columbia A1696 www.collectionscanada.ca/obj/m2/f7/9732.mp3)

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