



BRITISH
LIBRARY

Unlocking Audio

Sharing Experience of Mass Digitisation

26 – 27 October 2007

The British Library Centre for Conservation, London

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Unlocking Audio was organised by

Alison Faraday
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www.bl.uk/unlockingaudio

Dear Delegate,

Within the British Library's collections of over 150 million items, some of them dating from as early as 300 BC, sound recordings are relatively recent arrivals. Yet since the invention of sound recording technology 130 years ago, the growth in the world's audio heritage has exceeded all expectations. Sound has fast become one of the most significant media for recording cultural and documentary history and it is estimated that there are now over 50 million hours of audio recordings worldwide held in archives and libraries. However, as is true for the British Library's own audio holdings, many are contained within a multiplicity of analogue formats which are vulnerable to decay or to obsolescence arising from technological change. The key to unlocking this rich heritage is digitisation. Indeed, digitisation is the only option for ensuring future access to audio, as older formats become progressively unplayable.

The British Library is proud to host the Unlocking Audio conference in its new Centre for Conservation, opened in May 2007. This state-of-the-art addition to our building at St Pancras in central London offers the best possible conditions for the conservation of books and for audio engineering. A variety of projects are underway in the Sound Archive's ten sound studios, in fulfilment of one of the Library's key strategic priorities to build the digital research environment. We look forward to showing you what we are achieving and to learn from other experts.

I hope that by exchanging ideas and best practice with leaders and colleagues in the field, you will enjoy a fruitful and stimulating meeting and return to your institutions with renewed energy and new ideas to put into practice.

I wish the conference every success.

A handwritten signature in black ink that reads "Lynne Brindley". The signature is written in a cursive, flowing style.

Lynne Brindley
Chief Executive, British Library

Unlocking Audio: Sharing Experience of Mass Digitisation

26 – 27 October 2007

Practical information

Locations of conference sessions

Friday 26 October

Conference sessions and lunch will be held in the Centre for Conservation.

The conference dinner will be held in the British Library Restaurant. Access will be available to the building via Gate 5 and the main Library entrance doors for dinner attendees only.

Saturday 27 October

The 'Pastries and posters' session will be held in the Conference Centre which can be accessed via the Piazza at the front of the Library.

The remaining conference sessions and lunch will be held in the Centre for Conservation.

Excursions

There are optional excursions to major audio-visual collections available on the Saturday afternoon after the close of the conference. Both will take place between 15.30 and 16.30 and are within easy reach by public transport from the British Library.

Guided tour of BBC's audio preservation facility at Maida Vale.

A chance to see the BBC's well established digitisation facilities and also the famous BBC radio recording studios that have hosted everything from classical concerts to classic rock acts.

Guided tour of EMI Music Archive, Hayes.

A unique collection of record and gramophone catalogues, written archives and extensive collection of records issued by EMI and its associated labels worldwide from 1898, and a collection of historic playback and recording equipment.

Delegates should make their own travel arrangements to the locations, but the tours must be pre-booked at the conference desk on Friday 26 October; travel directions will then be supplied. Please note that there are very limited places for the tours.

Toilets

There are toilet facilities available on the first floor of the Centre for Conservation including an adapted toilet for those with disabilities. There are also toilet facilities available on all other floors of the main British Library building.

Telephones

Public telephones are situated in the cloakroom on the lower ground floor and in the Conference Centre. A Text telephone is available at the Information Desk.

Cash Machine

ATM facilities are located on the lower ground floor of the main British Library building next to the cloakroom. The machine is part of the 'Link' network and accepts all UK bank cards, Visa and American Express. There is no fee for using this machine.

Post Box

A post box is located on the lower ground floor of the main British Library building near to the cloakroom. Last collection is at 16.00 Monday to Friday.

Internet access

There are two public internet kiosks located in the cloakroom on the lower ground floor of the main British Library building next to the public telephones. Browsing the British Library website is free. Access to all other sites including email accounts is charged at 50p for 5 minutes. Instructions on how to use the kiosks are installed by the telephone points.

WiFi hotspots are located in the public areas in the main British Library building. Access to the British Library's own website and catalogue is free. PayGo airtime can be purchased over the internet. For further information please visit:
www.bl.uk/onlinegallery/visits/wifi.html

Bag searching

Bag searches are conducted for all visitors and Readers entering the building.

Cloakrooms

Friday 26 October

It will be possible to leave coats and bags in the Centre for Conservation during the conference. Valuable items should be deposited in the cloakroom or lockers situated on the lower ground floor in the main British Library building. Coats and bags can be deposited in the cloakroom, although storage space is limited and metal-framed items and bags larger than 0.5m in any dimension cannot be accepted.

Lockers for daily use are also available. The lockers are operated by a pound coin which is returnable. A change machine is situated on the lower ground floor of the main building near to the cloakroom.

Saturday 27 October

The 'Posters and pastries' session begins before the main British Library building opens. Cloakroom facilities are available in the Conference Centre where this session will be held. You are responsible for collecting your belongings at the end of this session for storage either in the main British Library building or in the Centre for Conservation.

British Library Shop

The British Library Shop is located in the Entrance Hall and is open 09.30 – 18.00 on Friday and 09.30 – 17.30 on Saturday.

Public exhibitions

To the left of the Entrance Hall is the entrance to the exhibition galleries. There are audio, visual and tactile displays. The lighting levels are low to help conserve the exhibits.

Emergency procedures

Should it be necessary to evacuate the building a continuous alarm will sound. Staff will assist visitors to leave the building.

Travelling to the British Library

The British Library is within walking distance of the following train stations:

St Pancras, King's Cross, King's Cross Thameslink and Euston.

The British Library is within walking distance of the following underground stations:

King's Cross/St Pancras, Euston and Euston Square.

The following bus routes travel close to the British Library:

10, 30, 73 and 91.

There is no car parking for the public on site.

There are car parks in Marchmont Street under the Brunswick Shopping Centre and on Judd Street (NCP). Metered parking is available on Ossulston Street (6 spaces). There are parking facilities for visitors with disabilities.

Conference Programme

Friday 26 October

To be held in the British Library Centre for Conservation

- 09.30 – 10.00 Registration
- 10.00 – 10.30 Welcome from Richard Ranft, Head of the Sound Archive and Ronald Milne, Director of Scholarship and Collections
- 10.30 – 11.00 **Keynote speech:** *Blind Spots on the Digital Highway*
Kevin Bradley
- 11.00 – 11.30 Coffee

Paper session 1

- 11.30 – 12.00 *First Experiences in Digitising Analogue Sound Documents*
Michaela Brodl
- 12.00 – 12.30 *Migration of 1.2 million hours of Audio Material over a 3-year period*
Martin Jacobson
- 12.30 – 13.00 *The University of California, Santa Barbara's Cylinder Preservation and Digitisation Project*
David Seubert
- 13.00 – 15.00 Lunch and tours of the Sound Archive technical department

Paper session 2

- 15.00 – 15.30 *Is it at all Possible to Avoid Migration of Content?*
George Brock-Nannestad
- 15.30 – 16.00 *Quality Control in Outsourced Preservation Projects*
Nadja Wallaszkovits
- 16.00 – 16.30 *The Sound Directions Project: Standards and Best Practices for Audio Preservation*
Mike Casey

Evening events to be held in the British Library Restaurant

- 18.45 – 19.30 Drinks reception for conference diners
- 19.30 – 22.00 Conference Dinner

Saturday 27 October

To be held in the British Library Conference Centre

08.30 – 10.00 **Pastries and Posters session**

Exhibition of poster and commercial exhibits.

To be held in the British Library Centre for Conservation

Paper session 3

10.15 – 10.45 *Audio Preservation as a "Bell Weather" for Video and Film*
Jim Lindner

10.45 – 11.15 *Sound Archiving in the Digital Age: the YLE Experience*
Pekka Gronow

11.15 – 11.45 *Large Scale Radio Programme Transfer: Digitisation
of the British Broadcasting Corporation's Radio Archive*
Jonathan Leong

11.45 – 12.15 Coffee

12.15 – 13.15 Roundtable discussion chaired by **Kevin Bradley**

13.15 Conference closes

13.30 – 14.30 Lunch

Excursions on Saturday 27 October 2007

See booking details on page 4

15.30 – 16.30 Guided Tour of the BBC's Audio Preservation Facility

15.30 – 16.30 Guided Tour of EMI Music Archive, Hayes

Blind Spots on the Digital Highway

Kevin Bradley
Curator, Oral History and Folklore
Director, Sound Preservation
National Library of Australia

Digital Technologies have, it seems, provided the necessary tools to allow sound archivists to simultaneously preserve their collections and provide non-rivalrous access to the content, perhaps in perpetuity. Advances in the wider (non-audio) world in digital content provision, digitisation, and digital preservation have all contributed to a socio-technical milieu where the possibilities assumed in this Unlocking Audio conference are not only possible, they are no longer optional. As pervasive as they are recent, digital technologies in the sound archive have, nonetheless, a history.

This paper considers the sound archiving pathway that has led to the present, the technologies that have been selected or cast aside, the critical decisions made and those that just seemed to make themselves, and the problems that have been solved or ignored along the way. It asks whether sound archiving has a distinct place in the complementary fields of image digitisation and digital preservation and what individual skills and qualities we need to find to manage that role. Finally, the paper looks behind, and ahead, and wonders what might be hiding in the blind spots as we pull out into the digital highway.

First Experiences in Digitising Analogue Sound Documents

Michaela Brodl
Head, Archiv des Österreichischen Volksliedwerkes
Austrian National Library

Although the collection of sound documents has never been regarded as a main objective of the Austrian National Library, the repositories of recordings have meanwhile grown to a respectable size. 22,000 analogue sound documents with about 30,000 hours of recordings must be protected against deterioration. Last year saw the first steps of this digitisation project.

The collection of audio material is spread over several departments such as the music collection, the archive of Austrian literature or the archive of Austrian folk music, each using its own catalogue. It contains different types of documents, including a small number of cylinders, a couple of instantaneous discs

and many shellacs and vinyl discs. The largest part of the collection consists of tapes and music cassettes featuring in-house concerts, dialogues and speeches of authors and poets as well as field recordings made by folk music researchers. Many of these are unique and highly valued recordings, classified as important examples of the intangible cultural heritage of our country.

After a long and difficult period of diligent preparation and discussions, the public invitation to tender was presented and the Austrian Mediathek of the Technisches Museum Wien emerged as the best.

The Austrian National Library thus faced the big challenge of digitising its holdings of endangered audiovisual media – as one of the first institutions of its kind, which was to prove a painful experience: although the International Association of Sound and Audiovisual Archives (IASA) has established worldwide standards, we did not succeed in finding anybody who could report seriously on their own experiences with digitising for long-term preservation. At the moment of the announcement even the Mediathek had been running its mass storage system for an insignificant five years! In the meantime, an increasing number of institutions have begun to transfer their analogue documents to the digital domain, and exchanging experience and sharing best practices are gaining in importance.

Migration of 1.2 Million Hours of Audio Material over a Three-Year Period

Martin Jacobson
Head of Technology and Development
The Swedish National Archive of Recorded
Sound and Moving Images (SLBA)

In May of 2007 SLBA finished a project to establish an infrastructure for mass-migration of substantial parts of its analogue audio and video collections to digital files. These digitised copies are subsequently made directly available online. SLBA intends to digitise nearly 1.2 million hours of audio material in approximately 3 years; production is now underway and meeting those expectations. A number of “unconventional” methods are used such as high-speed transfer, robotic automation, and the use of a suite of custom scripts that automatically process the digitised files. The infrastructure includes an in-house developed migration asset management system that handles both physical and logical material logistics including metadata, final storage and linkage to the description database records. Presently two 1/4 inch

open-reel audio formats are being migrated to Broadcast Wave files at the rate of 1500 hours per day on one shift. And audio residing on the data tape format QIC is robotically migrated at the rate of 576 hours per day.

Much improved preservation and access capabilities motivate this enormous effort and SLBA would like to share their experiences concerning such things as:

Issues considered when creating a migration strategy.

- Reasons for deciding not to outsource.
- Problems encountered.
- Technical, workflow, and metadata solutions
- Personnel considerations
- Costs
- Metrics

UCSB's Cylinder Preservation and Digitization Project: Lessons Learned

David Seubert
Curator, Performing Arts Collection
Davidson Library
University of California, Santa Barbara (UCSB)
USA

The goals of mass digitization projects are noble: universal online access to information. Mass digitization projects like UCSB's Cylinder Preservation and Digitization Project (CPDP) open up vast new audiences for an institution's collections and radically alter how and by whom these collections are used. Mass digitization largely makes the core of standard library practices – amass, store, catalog – obsolete, and the library of the future will simply be a node in a decentralized environment of information providers, known primarily for the materials they have put online. Libraries which do not move aggressively to put their collections online risk becoming irrelevant.

At this point in time, most of the technical aspects of digitization are fairly straightforward and it is clear that large-scale mass digitization of vast amounts of library and archival collections is all but inevitable, either by libraries or by corporations. However, as our experience with the CPDP has taught us, managing mass digitization projects is far from simple and the rapid expansion of digital initiatives raises some important questions that need to be discussed and addressed. Some of these issues include: how future projects will be staffed and funded; who will provide ongoing support for new uses and users created by digital collections; who will control future projects and prioritize the materials for digitization; the need to successfully integrate digitization projects into existing

library/archival environments; how we coordinate with similar initiatives or build collaborative repositories from dispersed collections; and, do we eliminate redundancy and select best copies through human or technical means. These issues all need further discussion in and among the institutions working toward the eventual goal of universal online access to information if we want to create successful digital repositories and avoid turning control of our resources over to others.

Is it at all Possible to Avoid Migration of Content?

George Brock-Nannestad
Historic Audio Consultant
Patent Tactics, Denmark

Current thought on AV archiving and retrieval relies on a 4-step process: digitization, recording on medium, migration to new system, re-constitution of signal. However, the media used all rely on analogue phenomena. The migration is entirely required because of the limited lifetime of the analogue carrier that is encoded with digital signals and/or the analogue interface in the reader of the digitally encoded signal. That this process is at all economically feasible is due to the falling costs of ever-changing systems.

With the recent upsurge in non-invasive reading of stored signals, some systems that were developed for storage of wide-bandwidth signals in the analogue era might be seen in a different light if 1) they are encoded with a digital signal, and 2) if they are read optically. It may be argued that carriers actually exist that will indeed have a lifetime of a century and that the technical requirements for their reading may be met by any electronic workshop during that century, simply because of the general technical development.

In order that the archiving community shall retain an awareness of the availability of such systems that need not rely on a large manufacturing base, the paper will discuss their capabilities and a possible approach to the implementation of a storage system based on a carrier with a very long lifetime. The implementation is based on the realization that the digitization step merely ensures constant quality and that all storage phenomena are analogue in nature. The process entirely avoids the step of migration.

Quality Control in Outsourced Preservation Projects

Nadja Wallaszkovits
Chief Engineer, Audio
Phonogrammarchiv, Austrian Academy of Sciences

More and more archives are outsourcing (parts of) their preservation / digitisation work. This major decision demands appropriate choice of a dedicated service provider, as well as ongoing quality control, to guarantee accurate transfers.

One of the burning problems for an archivist proper is: How can we ensure that the work paid for is done to archival perfection? Especially transferring large audio archives represents a daunting task, but also small scale migration projects have to verify the quality of their outsourced digitisation projects.

Automated transfer systems usually run quality control and error checking routines and algorithms, based on real-time analysis of the captured digitised signal. Although meanwhile highly developed and quite powerful, these routines cannot fully compensate a sound engineer's job.

Following the IASA-TC 04 Guidelines on the Production and Preservation of Digital Objects, the paper outlines the parameters typically analysed by capturing stations and focuses on the missing links between automated error monitoring and human skills. The question of reference settings and error interpretation is discussed and various associated issues and problems are exemplified. The paper outlines an approach to develop an adequate quality check procedure to control the control mechanisms by random tests: Trust is good, control is better!

The Sound Directions Project: Standards and Best Practices for Audio Preservation

Mike Casey
Associate Director for Recording Services
Archives of Traditional Music
Indiana University
USA

It is critical that audio preservation systems use technologies, formats, procedures, and techniques that conform to internationally-developed standards and best practices to ensure the quality of the work, foster long-term sustainability and interoperability of output, and increase the likelihood of successful future migration. Sound Directions, a research and development collaboration between Indiana University and Harvard University, was funded by the

National Endowment for the Humanities in the US to test emerging standards and develop best practices for audio preservation. This presentation will explore the products of Phase 1 of the Sound Directions project, including a set of best practices and a number of open source tools.

Audio Preservation as a “Bell Weather” for Video and Film

Jim Lindner
Managing Member, Media Matters LLC
Chief Executive Officer, SAMMA Systems Inc.

The paper will consider the move to digital files – and audio as the vanguard in terms of many things. As an example, Digital Audio for preservation does not really involve discussion of compression any more – whereas in video and film it is still a hot topic. Why? the reason is that with costs of storage continuing to plummet – the cost of storage for Audio relative to the overall costs of preservation is a non-issue, a tiny slice of the pie – for other media types this is not yet the case. As as the cost of storage comes down – many things are possible. There is no reason to consider compression any more in audio because the incremental cost of storing uncompressed is essentially meaningless relative to the long term benefit. So – audio in many ways blazes the path that others follow.

Other media types will be discussed in order to draw a contrast and provide context – but the focus is on how audio is the leader in many areas. The same can be said on the more commercial side – where 31 percent of all music sold last year was on file alone – no physical media – and where one can buy a device that for \$200 pounds or so will hold 40,000 songs (compressed of course). The point is that some of the changes going on today not only relate to the technology – but relate to human behavior and what we can do – and the richness of the human experience. The notion that in your pocket one can carry what would formerly require a warehouse of space – what does this mean to the role of audio (music, spoken word, etc.) in our lives. How does the audio technology available change how we think of the world and our role in it.

Sound Archiving in the Digital Age: the YLE Experience

Pekka Gronow
Senior Advisor, YLE Radio Archives
Finland

The Finnish Broadcasting Co (YLE) was an early adopter of digital mass storage technology in sound archiving. Our mass digitisation project started in 2003, and it is expected to be finished by 2015. It is now possible to draw some conclusions from work done so far.

YLE has over a quarter million unique analogue tapes and other obsolete sound carriers which are slowly deteriorating. About 30 per cent have now been digitised and moved to a mass storage system which is accessible on-line to all our producers. Selected parts of the record library are also digitised. The main push to digital archiving came from the fact that all radio programs today are “born digital” and it would be very expensive to archive them in any other form. In addition, metadata for new programs is also harvested automatically from radio production systems, with varying success.

The initial plan for the digital archive was based on the integration of production, archiving and service. The digitisation of the historical archive follows the principles of mass production, with a maximum of eleven tape recorders working simultaneously. Capacity could easily be doubled by hiring extra personnel. The sound files created are accessible to users within a few hours.

On the minus side, digitisation has made the archives extremely vulnerable to all the childhood illnesses of information technology. The problems are multiplied when production and archiving systems are integrated. Service providers have not fulfilled their promises, leading to down time and much unnecessary duplication of work. The biggest problems have occurred in the HSM system part of the mass storage system, which has been inoperative for days or even weeks and somehow sets some audio files in an inactive state on a weekly or daily basis. Fortunately this has not led to the loss of unique materials.

Because of these problems, it is extremely difficult to calculate the economic benefits of digitisation. We are slowly moving towards self-service and the automatic creation of metadata, but the benefits won't be fully realised in this decade. Digitisation also opens new possibilities which were not part of the plan. YLE now has an extremely popular “Open archive” service on

the web, featuring radio programs from 1935 on. This would not have been possible without the digitisation project. It would also be technically possible to make our digital archive part of the national (or perhaps global) research library system, but this would require another paradigm shift.

Large Scale Radio Programme Transfer: Digitisation of the British Broadcasting Corporation's Radio Archive

Jonathan Leong
Operations Manager, BBC Radio Resources
UK

The BBC's Radio Archives contains approximately 750,000 recorded items. This paper gives a technical account of the Radio Archive Preservation Project. Starting in 1999 with the transfer of the Radio 1 Session Archive, the Programme Transfer Team has since digitised over 180,000 files taking up 30TB of memory. It currently deploys 14 high definition digitisation workstations in a variety of configurations including, 1/4 inch tape, shellac, vinyl and DAT playback formats. Digitisation is prioritised according to broadcast critical material, items that are considered at risk and systematic preservation.

The management of the workflow is based around a bespoke database running on a 1000Base-T network with 2.8TB RAID-5 storage. Delivery to the Library is on LTO tapes and temporary hard disk storage; the discs are then replicated and stored in three locations for resilience. A separate project is underway to have these files permanently on-line for in-house users.

The Programme Transfer Team's large-scale audio digitisation is based on a trichotomous strategy consisting of modular scalability, multidisciplinary team skills and a firm technological infrastructure. The move away from the traditional “digitised hours” to a “digitised item” model has resulted in a more predictable and streamlined approach that is “best fit” to the existing radio programme holdings. The user base for these digitised items is mainly internal to the BBC, allowing producers access to programmes that were recorded on platforms that are no longer available for widespread playback. The editorial remit is to preserve the content and to deliver the archived radio programme in the most economic way taking into account the total cost of ownership of the process.

Speakers



Kevin Bradley is Curator of Oral History and Folklore and Director of Sound Preservation at the National Library of Australia. He is a member of the UNESCO Memory of the World Sub Committee on Technology (MoW SCoT) and Vice Chair of the IASA Technical Committee. He has been manager of the National Library's digital preservation program, and from 2004 to 2006 was the Sustainability Advisor for the Australian Partnership for Sustainable Repositories. He is President of the Australasian Sound Recordings Association (ASRA).



Michaela Brodl, was born in Vienna and is an ethnologist. Since 1992 she has been head of the archives of the Austrian Folk Music Society (Österreichisches Volksliedwerk), which became part of the Austrian National Library in 1994. She is responsible for the project "Long-term archiving of analogue sound documents", the first steps of which have been completed.



Mike Casey has training and experience as both an audio engineer and a sound archivist. He manages the Indiana University part of the Sound Directions project and also developed the Field Audio Collection Evaluation Tool (FACET) to aid selection for preservation. He is Co-chair of the ARSC Technical Committee.



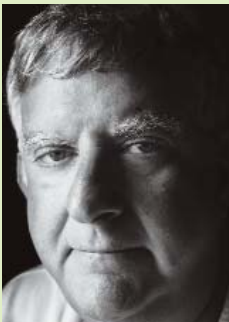
Pekka Gronow was for many years the manager of the YLE radio archives, and also responsible for planning the YLE digital archive system. He was a founder of the Finnish Institute of Recorded Sound, an institution dedicated to research on historical Finnish records. He is also adjunct professor of ethnomusicology at the University of Helsinki.



Martin Jacobson has twenty-five years experience in technology issues including communications and audiovisual applications and systems. For more than a decade he has focused primarily on digitization and preservation issues related to audiovisual content. He has taught classes in Digital Archiving for the University of Stockholm, and Audiovisual Digitization for the University of Gothenburg.



Jonathan Leong joined the BBC in 1984 and after four years of gathering experience across the range of programme genres, he specialised in the recording of pop music. Since 1999 he has been the technical Operations Manager responsible for the Digitisation of the Radio Archive. He also is a visiting lecturer at City University where he teaches Sound Recording and Music Production.



Jim Lindner is the Managing Member of Media Matters, whose clients include The Library of Congress and The Dance Heritage Coalition. A specialist in forensic video, he was Founder of VidiPax, and received the 1995 Film Preservation Award. His latest innovation called "SAMMA" or the "System for the Automated Migration of Media Archives" is currently under development. Jim is a former Board Member AMIA and FIAT, Chairman of Anthology Film Archives and is currently on the Executive Board of SEAPAVAA.



George Brock-Nannestad graduated in electronics in 1971, and from 1981–86 performed a major publicly funded project relating to retrieval of content from sound recordings. George was responsible for activities relating to media at the School of Conservation in Copenhagen 1991–98, and since 1997 he has acted as a private consultancy. He has published extensively.



David Seubert has curated the Performing Arts Collection at UCSB's Davidson Library since 1998. He manages the audiovisual archives and recorded sound collections and is project director of the "Cylinder Preservation and Digitization Project." He has degrees in music from Oberlin College and Library and Information Studies from the University of Wisconsin, Madison. David has taught courses in Audiovisual Archives Management at the University of Wisconsin Madison and consulted on audio preservation issues for various American organizations. He is president-elect of the Association for Recorded Sound Collections (ARSC).



Nadja Wallaszkovits manages the audio department of the Vienna Phonogrammarchiv and specialises in audio restoration, digital archiving and re-recording of historical tape collections. She is a consultant on archival technology for national and international institutions. She chairs the AES Austrian section, and is a member of the AES and IASA Technical Committees.

The British Library

The British Library is the national library of the United Kingdom and one of the world's greatest research libraries. It provides world class information services to the academic, business, research and scientific communities and offers unparalleled access to the world's largest and most comprehensive research collection. The Library's collection has developed over 250 years and exceeds 150 million separate items representing every age of written civilisation. It includes: books, journals, manuscripts, maps, stamps, music, patents, newspapers and sound recordings in all written and spoken languages. Further information is available on the Library's website at www.bl.uk.

Access

- The British Library serves business and industry, researchers, academics and students, in the UK and world-wide
- Each year:
 - Six million searches are generated by the British Library online catalogue
 - Nearly half a million visit our reading rooms
- Over 100 million items have been supplied to readers all over the world

Collections

- Oldest item - cuneiform tablet from Sumeria, circa 2027 BC
- Newest item – a patent issued electronically today
- Treasures include:
 - *Magna Carta*
 - *Lindisfarne Gospels*
 - Leonardo da Vinci's Notebook
 - *The Times* first edition from 18 March 1788
 - Beatles manuscripts
- Further information about the British Library is available on its website, www.bl.uk, which currently records almost 2 million 'hits' or visits per month.

Facts and Figures

The British Library is the national library of the United Kingdom and one of the world's greatest libraries.

Our vision is to make the world's intellectual, scientific and cultural heritage accessible, and to bring the collections of the British Library to everyone – at work, school, college or home.

- The Library's collection has developed over 250 years since the foundation of its parent, the Library of the British Museum, in 1753. Its collection exceeds 150 million separate items and includes books, journals, manuscripts, maps, stamps, music, patents, newspaper and sound recordings in most written and spoken languages
- We receive a copy of every publication produced in the UK and Ireland
- 3 million new items are incorporated every year
- The Sound Archive keeps sound recordings from 19th-century cylinders to the latest digital formats
- We house 8 million stamps and other philatelic items
- The collections require over 625 km of shelves, and grow 12km every year
- If you see 5 items today, it would take you 80,000 years to see the whole of the collection
- The earliest dated printed book, the *Diamond Sutra*, can be seen in our exhibition galleries alongside many other national treasures
- We have on-site space for over 1,200 readers
- Over 16,000 people use the collections each day
- Online catalogues, information and exhibitions can be found on this website
- We operate the world's largest document delivery service providing some 4 million items a year to customers all over the world
- Every working day services are offered in seventeen reading rooms and study areas.
- At present the Library has over 2,300 staff. Approximately half of these are in sites in London with 1,000 working at St Pancras, the remainder work at Boston Spa in Yorkshire.



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- Amount of speech and music segments
- Bandwidth (incl. upper and lower border frequency)
- Maximum DC offset
- Range, headroom, peak, headroom and dBFS
- Dynamics
- Average signal level, signal peak & signal silence level
- Signal-to-noise ratio
- SNR(dB)
- Correlation
- Clipping
- RPE
- RPE ratio
- Cut, beeline and shames
- Head logging
- Coding error



Try before you buy!

Download your fully functional software for
free testing at www.audioinspector.com

The British Library Centre for Conservation

The British Library Centre for Conservation is a new state-of-the-art addition to our building at St Pancras, in central London. It provides purpose-built accommodation designed to meet the specific requirements of its occupants. As well as a greatly improved working environment for staff, the building offers the best possible conditions for the conservation of books and for audio engineering. The facilities and programmes take Conservation, Collection Care and the Sound Archive out of the back room and into the public eye. There is a free public exhibition and a programme of events including tours and seminars.

The conservation studios are on the top floor of this three-storey building. An important design feature is the sawtooth roof that provides year-round north light for conservation work. Each of the three studios has conservation benches specifically designed for our requirements. Running alongside is a dedicated wet area for washing and other aqueous treatments of collection items. There is a fourth studio, which in addition to being a base for a team, is flexible enough to accommodate project work, workshops and demonstrations and training programmes. There are a number of other facilities in the building such as areas for the treatment of material with solvents, a separate space for leafcasting, a workshop and a facility for archival box-making.

The Sound Archive Studios – designed to meet the exacting audio engineering standards required for high-quality sound recording, digitisation, and remastering – are housed on the lower floor of the building. There are ten transfer studios, one recording studio, a small workshop and a laboratory. The studios have the direct benefits of improving our ability to produce in-house copying of recorded sound items to international archival standards using appropriate technical expertise and equipment, and improving access to our collections through greater on-site and remote access to Sound Archive holdings by mastering of CD publications, and by producing audio excerpts for exhibitions and on the web. The recording studio allows us to make high-quality microphone recordings of oral history interviews and other live performances for the Sound Archive collections but also for radio broadcasts and web podcasts.

Two of the transfer studios are designed for training, where students can learn and practise the craft and science of audio archiving. In recognition of the growing need for specialised training in sound archiving, the British Library has an internship programme aimed at developing the practical skills of archivists and technicians. Interns will benefit from a valuable learning experience and from studying an operational sound archive working to international archival standards.

Bursaries will be available each year for three years; two bursaries of £5000 for five month internships and £2000 bursaries for five shorter internships of two months.

For more information please contact Alison Faraday alison.faraday@bl.uk



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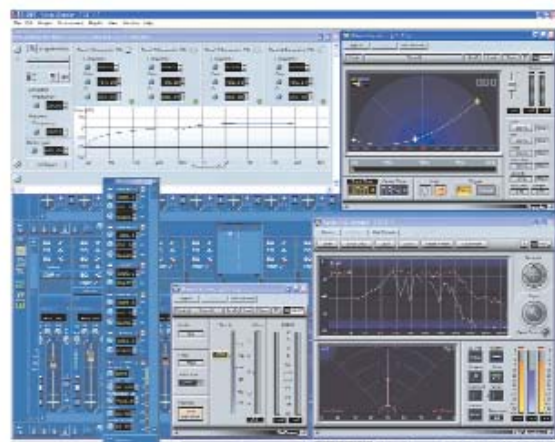
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