Audiovisual preservation in the National Archives of Australia

Brendan Somes

National Archives of Australia

Summary

The National Archives of Australia has an audiovisual archive of 30 kilometres. The archive contains significant audiovisual material created by Australian Government agencies and significant Australian Government politicians. To meet the challenges posed by audiovisual preservation, the National Archives has a number of major projects that will be delivered over the next four years. These are the implementation of an audiovisual asset management system to manage both analog and digital audiovisual material; the building of a new repository in Canberra and the upgrading of the existing repository in Sydney that will provide a further 18 kilometres of storage for audiovisual material; and the establishment of an audiovisual digital archive in Sydney.

Introduction

If every picture tells 1000 words, then moving image, 24 frames a second, tells 24,000 words a minute. With its ability to capture what human beings saw and what human beings heard, the audiovisual record can provide what the documentary record cannot, it can deliver the 'this is what it was like' experience.

In this presentation, I will provide an overview of the National Archives of Australia's audiovisual archive, consider the challenges of audiovisual preservation, and then look at how the National Archives is meeting those challenges. At the conclusion of the presentation, there will be a short film using material from the archive showing a glimpse of what was heard and seen in 20th century Australia.

The National Archives' objective is to promote the creation, management and preservation of authentic, reliable and usable Commonwealth records and to facilitate Australians' access to the archival resources of the Commonwealth. The Archives has repositories in all Australian states and territories. In terms of quantities, each repository holds:

Office	Total Metres
Canberra	110 548
Sydney	161 262

Melbourne	52 267
Brisbane	24 802
Perth	19 697
Adelaide	3 730
Hobart	3 484
Darwin	2 580
Total	378 370

In terms of formats:

Format	Total Metres
Audio	2 014
Audiovisual	28 585
Bound volume	19 109
Cartographic	26 754
Electronic record	187
Microform	939
Paper file or document	296 270
Photographic	4 358
Other format	229

The audiovisual archive is made up of the audiovisual and audio formats and totals approximately 30 kilometres. This is made up of 600,000 items (physical units) equating to approximately 300,000 titles. The majority (83%) of this audiovisual archive is stored at the National Archives' Sydney repository. The audiovisual archive also stored at the Melbourne repository (10%) and the Perth repository (6%).

The audiovisual archive

The audiovisual archive consists of the material of Australian Government agencies and significant politicians that has been appraised as archival resources, including the records of the government's:

- broadcasting agencies – the Australian Broadcasting Corporation (ABC) and the Special Broadcasting Service (SBS);
- audiovisual school – Australian Film Television and Radio School (AFTRS);
- publicity agencies – including the Department of Information and successor agencies, and Tourism Australia and predecessor agencies;

- significant politicians – for example, former prime ministers Harold Holt, Gough Whitlam, Bob Hawke, Paul Keating and John Howard;
- Department of Defence, the Army, the Navy, Defence Science and Technology Organisation, and Australian Security and Intelligence Organisation (ASIO); and
- many agencies which, in their usual business, created audiovisual material – for example, the Office of Film and Literature Classification, the Australian Antarctic Division, the Great Barrier Marine Park Authority and the Snowy Mountains Hydro-Electric Authority.

The archive also includes the Film Australia collection. This archival collection was created by a succession of agencies, including Film Australia, that were responsible for creating an audiovisual record of Australian life between 1913 and 2008. In 1913 the Cinema and Photographic Branch within the Department of External Affairs was formed, the first government agency responsible for the creation of audiovisual material. The National Archives is responsible for preservation of the Film Australia collection and the National Film and Sound Archive of Australia manages access.

Of the 30 kilometres of the audiovisual archive, the main holdings are those of the Australian Broadcasting Corporation (ABC) – 18 kilometres; the Film Australia collection – 6 kilometres; Defence (and related agencies) – 3 kilometres; and the Australian Film Television and Radio School and Antarctic Division – 1 kilometre each.

In terms of formats, the archive has 256,000 films, 242,000 audio items, and 84,000 videos. Of the films, the majority are acetate-based; we have very small quantities of nitrate and polyester-based film. For the audio, the main formats are ¼-inch tapes (100,000), gramophones (52,000), compact discs (48,000), and compact cassettes (33,000). For video, the main formats are 1-inch (25,000), Digital Betacam (16,000), VHS (16,000), Betacam SP (7,000), and U-matic (7,000).

The preservation challenge

How then do we preserve the audiovisual archive? The National Archives' approach to preservation is documented in its National Preservation Strategy. This document provides the criteria for prioritising the material to be preserved and outlines their respective preservation treatments. It divides material into Class 1 and Class 2 groups – the material in Class 1 is most at-risk and Class 2 at lesser risk. The most at-risk audiovisual records, Class 1, are:

- Audiovisual records that are reliant on obsolete technology for playback;

- Motion picture film and magnetic film records with 'vinegar syndrome';
- Motion picture film based on cellulose nitrate;
- Magnetic tape media displaying 'hydrolysis'; and
- Colour film with dye fade.

The audiovisual records in Class 2 are:

- Motion picture film and magnetic tape records prone to 'vinegar syndrome';
- Magnetic tape media prone to 'hydrolysis'; and
- Colour motion picture film.

So for the audiovisual archive, the at-risk material is audio and video on formats that require obsolete machines for their playback. We treat these formats by copying the content to new digital formats. For film, the at-risk material is acetate-based film that is at risk through vinegar syndrome, hydrolysis, and colour fade. We treat this material by providing the best available storage conditions and, where the material is significantly at-risk, copying the content to a new format. For nitrate film, for which we have only a small quantity, we firstly copy and then store in appropriate secure conditions.

The challenge of audiovisual preservation is preserving the archive before the content is lost, either through chemical degradation or obsolescence. Time past. Time present. Time future. For obsolescence the task is straightforward – we need to copy the content to new formats. The game then becomes racing against the obsolescence clock. The most effective and efficient treatment for film-based material is appropriate storage. Treatment for film-based material will then be a combination of appropriate storage and, where the content is at risk of loss, copying.

To better meet this challenge, the National Archives has secured government funding for a new purpose-built repository in Canberra. This repository will provide storage for 100 kilometres of paper archives and 10 kilometres of low-temperature storage for audiovisual and photographic archives. Storage conditions in our Sydney repository will also be upgraded with a further eight kilometres of low-temperature storage for audiovisual and photographic archives. As to how 'low' the 'low temperature' will be, this will be confirmed in the design stages for each repository. We will aim for as low as possible. We know that sub-zero storage is best for film-based material, however subject to costs we may select a range of low-temperature conditions – that is sub-zero, cold (4 to 8 degrees Celsius) and cool (10 to 14 degrees Celsius). The Sydney repository work will be completed in 2015 and the new Canberra repository will be completed in 2016.

The digital audiovisual preservation challenge

The second challenge of audiovisual preservation is presented by digital material, either born digital material or digital content created through digitisation of analog formats. How to manage the very large digital files? How to ensure authenticity? How to manage the large variety of digital formats? How to maintain accessibility over time? Time past. Time present. Time future. One of our main preservation treatments is copying content to new digital formats. This selection of the digital audiovisual preservation formats is a critical decision – we need to select formats that will capture the full performance of the content on the original format, we need to select formats that will be robust and, preferably, formats that are openly specified and not subject to patents or intellectual rights. We recognise the field of digital audiovisual preservation and digital audiovisual formats is dynamic so we will be monitoring developments and altering, where required, our policies and procedures. The National Archives has selected two audio preservation formats: the International Association of Sound and Audiovisual Archives (IASA) endorsed format of BWF and the open source format, FLAC. Why two formats? For two reasons – BWF is not free of patents whereas FLAC is; on the other hand, BWF has greater compatibility with our existing audio preservation workflows. For video preservation, our present format is JPEG 2000. There is currently not a suitable open source video preservation format so we have chosen JPEG 2000. For film, our film preservation format is uncompressed AVI. There is presently no suitable open source film preservation format. For born digital material, the preservation formats will be those as outlined, however we will also keep the material in its original format. It is recognised that this approach to preservation formats represents a considerable storage investment; however given the Archives' role to preserve for all time the records of the Australian Government, it is an essential investment.

Two initiatives

The National Archives is presently working on two initiatives that will assist in addressing the challenges of preserving digital audiovisual archives. Firstly, we will be implementing a new audiovisual asset management system in 2014. This system will manage the audiovisual archive from the point of transfer to the point of access. The Archives has chosen the Mediaflex system, developed by an English company, TransMedia Dynamics. This system, also in use at the National Film and Sound Archive of Australia, will manage both analog and digital audiovisual material, and is expected to enable, especially for digital audiovisual material, more efficient and effective workflows.

The second initiative is the development of an audiovisual digital archive in the National Archives' Sydney repository. This archive will store digital audiovisual material, both born

digital and digitised, that has been appraised as constituting the archival resources of the Australian Government. This audiovisual digital archive will complement the digital archive in the Canberra repository. The Canberra digital archive, the document digital archive, established in 2007, stores and will continue to store, all non-audiovisual digital content (for example, documents and emails). The audiovisual digital archive will be established on the principles articulated in the Archives' Digital Preservation Policy. These include ensuring that the audiovisual digital archive has processes and procedures to, firstly, ensure the authenticity, integrity and security of digital records and, secondly, meet the archival requirements of provenance and original order. The audiovisual digital archive will also, as far as possible, adhere to the principles of utilising open standards, open source software solutions and independence from information technology vendors. The audiovisual digital archive is scheduled for completion in 2015.

The National Archives' audiovisual preservation program over the next five years will therefore comprise a number of streams:
1. The first stream is the 'hands-on' work: copying the near-obsolete formats (in 2012–13 focusing on EIAJ and U-matic videos and audio compact cassettes); treating and repackaging the film; copying the at-risk film (with high vinegar syndrome readings), and relocating material to more appropriate storage.
2. The second stream is surveying. This involves surveying the archive to increase our knowledge of the condition of the archive. We will do this through vinegar surveying of the acetate-based film. This surveying is essential as it enables us to better target material for preservation. It also includes surveying to increase our knowledge of formats. We have surveyed the audio and video formats, we have more to do in surveying the film. Finally, it involves surveying the technology second-hand markets to ensure we remain current in our assessment of obsolete formats. This will also assist us to maintain a roster of working machines.
3. The third stream involves maintenance of the storage conditions. This includes monitoring the temperature and humidity over time and analysing this data, both in terms of assessing the conditions of the storage and the impact of those storage conditions on the materials.
4. The fourth stream involves the management of digital audiovisual material and establishment of the audiovisual digital archive.
5. The fifth stream involves delivery of the new audiovisual asset management system.
6. The sixth and final stream involves delivery of the new Canberra repository and the upgraded Sydney repository.

The delivery of this program over the next five years will go a long way in addressing the challenges posed by the legacy analog audiovisual archive and the born digital archive. We will have 18 kilometres of low-temperature storage, a new asset management system, an audiovisual digital archive, greater knowledge of the archive and, most importantly, we would have preserved, through copying, intensive treatment and appropriate storage, a substantial amount of the audiovisual archive.

This audiovisual preservation program ensures the ongoing accessibility of the audiovisual archive. We do not preserve for the fun of it, though there is some fun involved. We preserve so that generations, now and in the future, have access to the story of Australia and its people. The story of what Australians saw and what Australians heard.

> Time present and time past
> Are both perhaps present in time future,
> And time future contained in time past.[1]

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[1] TS Eliot, *Burnt Norton* (1936), *Collected Poems 1909–1962*, Faber and Faber, London, 1990.