

SEAPAVAA MANUAL FOR AV ARCHIVES

An outline prepared for UNESCO by Ray Edmondson

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Working parameters

This document is an outline for a basic audiovisual archiving manual designed for use in the S E Asia/Pacific environment. It aims at covering the essentials of creating and managing an AV archive. It is designed for archives in which resources or skills are limited, in which available facilities and support infrastructure is limited, which are in new or pioneering situations. It therefore seeks to offer practical guidance in situations in which 'perfect' solutions are not available, but in which archives can 'buy time' while taking a longer term view to growing their capabilities and political support.

This is not a complete or finished manual, ready to use: rather, it is a platform or "chopping block" on which a full manual can be built. It goes beyond the traditional areas of practical skills to include theory, philosophy, ethics, general management, and the politics and practicalities of developing the support base that is necessary for archives to carry out their central functions in the long term.

Some text is presented in 'finished' form. Some text, in *italics*, indicates development directions for the future, complete manual. Further, this document is entirely textual, but the finished manual may arrange much information differently, as tables or diagrams. All of the document is subject to review and debate, to the addition of new topics and the deletion of information inappropriate or unnecessary for the intended audience.

Source acknowledgement

Some material in the following text has been adapted by the author from his own earlier writings, including *A Philosophy of Audiovisual Archiving* (UNESCO, 1998), the *Revised General Guidelines for the Memory of the World Programme* (UNESCO, 2002), and various articles and university lecture notes.

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Chapter 1 – Background and context

Introduction

In the early twentieth century sound recordings and motion pictures were widely assumed to have no enduring value. The audiovisual media did not easily fit into libraries, archives and museums, and their cultural value was widely disregarded. Film archives emerged only in the 1930s, while sound archives evolved separately. Slowly, the cultural value of the audiovisual media gained acceptance. Today, audiovisual archiving takes place within a large range of institutional types. The history of audiovisual archiving differs greatly from country to country. It is related in part to how audiovisual media has been used in each country; and it has been influenced by a host of factors - structural, financial, practical, and political.

See appendix A for a summary history of the AV media

diagram time chart

Why do we have AV archives?

The audiovisual media, as they are now generally termed, stand alongside the older forms of record and communication, such as the written and printed word, the photograph, the painting and the drawing. These older forms of communication supplement audiovisual media; in some cases they have been replaced by them. But more than that, they have given rise to entirely new means of expression through recording, communicating and entertaining. When it became clear that audiovisual media were here to stay, collecting institutions - libraries, museums, archives and galleries - had to begin taking these new forms into account when formalising their collection development and management strategies.

In some ways the audiovisual media share intellectual, physical and contextual characteristics with older media. For instance, they are deliberate creations and creatures of their time and cultural origin. In other ways they are entirely different on one or all of these counts. For example, they have distinctive physical formats and storage needs, and can only be comprehended via the appropriate technology. This means that management of these resources must take account of both the traditional principles and methods of managing information resources, and the new principles, methods and paradigms which arise from the nature of the audiovisual media themselves.

definitions in glossary from “Philosophy” of audiovisual media, archive, archivist

summary table from “Philosophy” showing library/museum/archives/AV archives comparison

The nature of the AV media

The audiovisual media depend on three realities of human perception: interpretation of sound; the phenomenon of *persistence of vision*; and suspension of disbelief. *Sound* is, objectively, a continuous variation in air pressure; subjectively, we detect it as having meaning and quality. *Persistence of vision* is the capacity of the brain to distinguish between discrete images seen in rapid succession. A motion picture is a series of still images rapidly displayed in succession but perceived as a moving image. *Suspension of disbelief* is what occurs when, listening or viewing, we subjugate our rational appreciation to a willingness to respond emotionally and subjectively.

Physical concepts

Film is a transparent strip (the base) to which is bonded an emulsion layer carrying photographic images. The sound track runs parallel to one edge of the strip. Rectangular holes along the edge of the strip engage in the camera or projector's sprocket mechanism. Common film gauges are 16mm and 35mm. Film dimensions (e.g. gauge, perforation, width of sound track, speed in frames per second) are standardised. Sound tracks are magnetic or optical.

Magnetic tape comprises a thin, flexible base of acetate or polyester coated on one side with a metallic compound. The metallic particles hold a magnetic pattern induced by variations in an electrical field as the tape passes over a 'recording head'. When passed over a 'playback head', these electrical variations are converted into sound or images. Tape comes in many cassette and reel formats for audio and video recording.

In **gramophone discs** the analog signal is carried in a mechanically created spiral groove. A stylus tracking the groove reacts to variations and these mechanical movements are amplified into audible sounds. Discs have been produced in a variety of sizes and recording/playback speeds, for example 78 rpm, 45 rpm and 33-1/3 rpm.

The **compact disc** (CD) is a 'sandwich' with a reflective metallic layer carrying the digital signal positioned beneath a clear plastic compound. The signal is recorded as a series of 'pits' in the reflective layer and is read by a low power laser beam. The disc can carry audio, video or multimedia information. Examples are CD, CD ROM, VCD (video compact disc) and DVD (digital video disc). Images and sounds in digital form can also be stored, copied and transmitted as **computer files**.

support above with diagrams, possibly animated on CD ROM

Physical and chemical characteristics

Temperature and humidity. Audiovisual carriers are sensitive to temperature and humidity and, for preservation purposes, should desirably be stored in an environment where these two factors are both stable and set at acceptable levels.

Internal stresses. Many audiovisual carriers are designed to be transported through mechanical systems and should be dimensionally stable to retain physical integrity.

Chemical/physical degradation. Chemical processes at work in audiovisual carriers affect them over time. In general, low temperature and humidity slows down chemical reaction. Some examples are: *cellulose nitrate film* decomposes, eventually becomes sticky and congeals; *cellulose triacetate film* similarly breaks down (this is known as vinegar syndrome); the *dyes used in colour film* may fade over time.

Vulnerabilities. Many carriers contain organic materials and can, in warm and moist conditions, support mould and fungus growth. Atmospheric pollutants, such as industrial gases, can attack audiovisual carriers.

Mechanical damage. Careless or improper handling of carriers can impair or destroy them. For example, film and CDs collect scratches; tape can crush, crinkle or break.

support above with diagrams

Intellectual characteristics

The work. The physical entity - the carrier - is the place where the images and sounds comprising the work are embodied. One sees, hears and experiences the work, not the physical entity.

The context. A work usually has a context. For example, radio and TV programs are presented as part of a larger program schedule. To fully understand the work, the context needs to be preserved, for example by collecting related materials.

Format characteristics

A carrier (disc, cassette, reel of film or tape) is the basic physical unit of a work. A work may consist of many carriers; conversely, several works may be on a single carrier. Audiovisual media are vulnerable to the effects of format progression (technological obsolescence). When the commercial life of a particular format is ended, it must still be supported within the audiovisual archive, or material must be transferred to new formats. Successive copying usually involves loss of quality.

support with illustrations

Principles of storage, handling and documentation

Carriers and materials differ in their physical nature and hence in their storage needs. To accommodate the simultaneous needs of preservation and access, audiovisual archives follow the principle of paralleling - holding the same work in multiple copies: for example, a preservation or master copy; an intermediate copy; access copies. Collection control is an essential precursor to managing the collection. Until it is done, neither providing access nor preservation action is responsibly possible.

support with diagram

Typology of AV archives

comparative table from "Philosophy"

The global movement - International structures, organisations and projects

Most audiovisual archives have links with national, regional or global associations. Membership of these have many benefits: access to information-sharing networks; participation in policymaking, standard setting and research projects; wider visibility for one's products and services; access to training, support structures and reference points; resource sharing, and loans of collection material; professional interaction with peers; access to international funding sources. Most audiovisual archives employ fewer than ten people so it is important to connect with other fellow professionals. Reasons include: moral support; avoiding xenophobia; keeping up to date; assistance with problem solving; networking; professional development.

diagram setting out names and roles of the CCAAA, its member associations and other relevant groups

Networking and assistance

information about relevant listserves and other contact points

Literature

The literature on audiovisual archiving is relatively small, though expanding steadily. Literature in related fields is also important. The main genres are:

1. *The Federations*. Organisations like IASA, FIAT, FIAF, AMIA, SEAPAVAA produce newsletters or journals, monographs, reports and other useful publications.
2. *UNESCO*. Check their website for useful publications.
3. *Industry technical publications*, e.g. the *SMPTE Journal*.
4. *Journals and monographs of the collecting professions*.
5. *Collectors' and enthusiasts' journals*.
6. *Journals of the production and distribution industries*.
7. *Film, radio, television and audio scholarship*, e.g. *The Gramophone*, *Cahiers du Cinema*, *Sight and Sound*, *Cinema Papers*, *Film History*.
8. *Journals, publications, web sites of individual audiovisual archives*.
9. *Searching the Web generally*.
10. *Libraries*. Check the libraries available to you in your locality.

Above list to be reviewed to include journals etc likely to be readily available to users of the manual.

A bibliography will be included at the end of the manual

Chapter 2 – Philosophy, theory and principles

The profession of AV archiving

The ‘collecting’ professions are generally regarded as including: library science/ librarianship, archival science/ archivism, conservation, information science, documentarism, museology, curatorial disciplines, informatics. Audiovisual archiving has much in common with them, as well as having areas specific to itself.

Audiovisual archivists work in a variety of corporate contexts. Many audiovisual archives, such as the in-house archives of television networks, are clearly part of the corporate structure of those industries.

Philosophy of AV archiving

A succinct outline of philosophical principles and issues, at which what follows is a first attempt, will be set out in text and perhaps diagrammatic form. The reader will be pointed to the full UNESCO document, “A Philosophy of AV archiving” available in hard copy or on line

Underlying the practice of audiovisual archiving are a range of theories, principles and assumptions. It is important to understand and explore them as the profession enlarges and evolves. There is some commonality with the philosophical basis of related fields such as librarianship, conservation, archival science and museology.

The nature of philosophical issues is that they permit exploration, and often raise more questions than they answer. They are the foundational assumptions of our work and *therefore the intellectual engine which drives policies, visions and decisions.*

Shared values

Among the shared values of all these fields are the following:

- *Respect for the integrity of the original work or artefact.* Although access may require copying or editing, it must be possible to ‘go back to the original’.
- *The ultimate motivation of accessibility of collections.* The ultimate purpose of building a collection is to provide access to its contents.
- *The discipline of cataloguing or describing collections in an orderly and internally consistent way.* ‘Working to rule’ is essential to an effective catalogue.

- *'The rule of law' - the observance of legalities and rational policy rather than personal caprice.* We are bound by the laws of copyright and contract.
- *The exercise of personal judgement and accountability in managing collections and services.* The responsibility for making judgements carries with it the need for accountability for our decisions, and our acceptance of that accountability.
- *The ethics of custodianship and the sharing of knowledge.* We work for the survival of a heritage that will outlive us, and we share our knowledge of it.

Worldview and paradigm

Particular perspectives, paradigms or worldviews define the various collecting professions.

Libraries provide information in a wide range of formats, usually published, and created with conscious intent to inform, persuade, move, entertain. The basic unit of the library collection is the discrete item – e.g. book, periodical, recording, map.

Archives deal largely with unpublished material - accumulated records of social or organisational activity judged to be of continuing evidential or informational value.

Museums deal in objects rather than documents or publications: collecting, researching, documenting, displaying. Conservation and the skills of public display under controlled conditions for educational purposes are fundamental.

Perspectives

The worldview of audiovisual archives contains a number of other defining features These include:

- *Industries and the audiovisual media:* Audiovisual archives are part of the international audiovisual industries and their culture.
- *Corporate culture:* Audiovisual archivists have a sense of mission and urgency because of factors such as the fragile nature of the audiovisual media, the pioneering flavour of the field, and the small numbers of audiovisual archivists.
- *Versatility:* Audiovisual archivists must have a basic general technical knowledge, and a historical knowledge of the audiovisual media.
- *Technical perspective:* Audiovisual archivists must have the capacity to think in technical terms, to operate technical equipment and to understand the direct consequences for collection material through inappropriate storage.
- *Context linkage:* The preservation and accessibility of moving images and sound recordings often involves copying; documentation assumes critical importance.

Nature of the audiovisual media

The philosophy of audiovisual archiving should derive directly from *the nature of the audiovisual media*. Three conclusions result: The audiovisual media have some defining

- physical characteristics which, in turn, need to influence the way they are arranged, stored, managed and replicated.
- intellectual or creative characteristics.
- issues of context or association specific to audiovisual media.

Principles

Some principles of audiovisual archiving should be noted. They include:

- *Essentiality of selection*. We must make value judgements about what will, and will not, be collected. An institution can also create material.
- *Carrier/content principle*. We must separate the concept of *carrier* (the physical item) from *work* or *content* (the sounds and/or images comprised therein) to ensure the permanent survival of the content with minimum loss of information.
- *Quality principle*. Any loss of image or sound quality through carrier degradation or poor copying is a loss of important information.
- *Survival principle*. No work should be put at risk to meet short term access needs. The motive of an audiovisual archive is preservation in the interests of permanent access, not exploitation with no thought for tomorrow.
- *Paralleling principle*. holding the same work in multiple copies of different status - preservation, duplicating, access.
- *Control/cataloguing principle*. It is essential to both control the collection accurately and to provide cataloguing information as an access aid.

Ethics

This section will set out, in summary, the main ethical reference points – personal and institutional – for AV archives. It will refer to existing codes of ethics – e.g. FIAF, ICA, ICCM and so on and point to URLs or other means of access to the complete codes. Extracts from some codes may be included as an Appendix.

Many professions have codes of ethics which apply to the particular circumstances and issues faced by its practitioners. These are essential to underpin public confidence in the profession and its institutions, to clarify professional values and motivations, and to provide guidance in personal conduct and the exercise of judgement. Ethical values apply at both the institutional and the personal levels.

The effective audiovisual archivist needs a very conscious and deliberate approach to ethical values, a willingness to form and hold personal viewpoints on ethical issues rather than adopting second-hand opinions, and a capacity for self-analysis.

Legal context

In every country, a body of law sets out the legal framework of acceptable values and codes of behaviour. While these differ from country to country, there is also considerable commonality, especially at the level of basic legal principles. For those employed by government or public bodies, there may be an additional body of law regulating their conduct.

Moral rights

Moral rights derive from moral principle or social custom. They may be an expression of the social traditions or norms of a minority group within a society, and be at variance with the assumptions of the majority culture or cultures. An example is the Australian Aboriginal people's traditional sacred ceremonies and rites which have been recorded and filmed over the last century. It may be a violation of traditional Aboriginal law for women to view, hear or even handle such material. Collecting institutions try to reconcile legal and moral rights, but it is not always easy. For example, in archives in Australia film of sacred Aboriginal ceremonies should not be handled by female staff members at any processing stage at which visual inspection can occur.

Accountability

Audiovisual archivists are accountable before the law, to our employers, and to our clientele, our colleagues, and our society. Accountability is governed by codifiable rules as well as by personal values and behaviour.

Responsibility

Audiovisual archivists are in positions of power - power over the survival of materials, and power to dramatically or subtly change *history itself*. This power must be exercised responsibly. Some examples:

- Because audiovisual works are usually copied, they are vulnerable to change and manipulation. A 35mm theatrical film may be viewed, via a VHS cassette, by end users who are *unaware* that the images they are watching are pictorially much inferior to the original, or are being shown at the wrong speed, or are wrongly colour balanced. They will judge the film accordingly – and incorrectly.
- Digital technology now provides the means to manipulate image and sound and *change a work without anyone ever being the wiser*. What are the limits of the responsible use of this power?

- It is possible for you or I to deliberately damage a recording or partially wipe a magnetic tape, put it back on the shelf, and when it is next retrieved for use *no one will know who caused the damage or how or when it happened.*

In other words, in many areas of work audiovisual archivists have enormous discretion available to them and *no one can easily check up on how responsibly they have exercised it.* The burden of responsibility is clear: it is up to you!

Confidentiality

Some aspects of audiovisual archiving involve the capacity to observe both commercial and personal confidentiality. Some users (for example, film or television producers) need to keep the content of their research projects confidential. Relevant staff in the archive must keep this information confidential. Audiovisual managers can be privy to a great deal of commercially sensitive confidential information. Many archives contain collections of oral history recordings which contain embargoed information of a sensitive nature.

Conflict of interest

Conflicts of interest can occur when your personal involvements are (or appear to be) in conflict with your professional obligations. Dealing with such conflict is usually a matter of judgement. When in doubt, it is best to declare it to someone who will be objective - an employer, a supervisor, a colleague - and seek their opinion.

Honesty and integrity

Honesty and integrity are vital to all aspects of audiovisual archiving because the field depends so heavily on trust. Failure in this area can very rapidly undermine an archive's support base as well as devastate staff morale.

Exercising judgement

Ethics are ultimately a matter of personal judgement. Some issues are simple and clear cut; some are neither. Questions of conscience arise and cannot be ignored.

Politics and professionalism

Perhaps ethics are hardest of all to apply in relating to your colleagues at work. In fact, a healthy institution where trust levels are high and there is ready sharing of knowledge can be an extraordinarily satisfying and fulfilling place to work. Whatever the profile of your particular workplace, your ethics and professionalism will influence it!

Collection development

The long term success of your work will depend on how well you handle its ethical dimension. Here are some of the main issues you will face.

- *Observance of legalities:* It is tempting to obtain material from a suspect source.
- *Conflict of interest:* An example is the acquisition officer also being a private collector of audiovisual material.
- *Sweeteners:* Offers such as a personal gift require judgement, so as not to suggest that a collection development decision was influenced by personal gain.
- *Honesty:* All collecting institutions need to give careful thought to operational security, but there has to be reliance on personal, professional honesty.
- *Can you keep a secret?* Acquisition transactions may involve confidential information. Agreements must be honoured absolutely.

Collection management

Custodianship of priceless and irreplaceable material has 3 crucial ethical dimensions:

1. *Protecting the integrity of the works in the collection* - means taking seriously the term 'guardian': you do not censor or alter, or attempt to falsify history.
2. *Taking reasonable care* - taking all reasonable precautions against accidental damage, theft, misuse, loss, degradation or misadventure ... actively.
3. *Don't appropriate for personal purposes any collection items* - you don't utilise collection items for personal privilege or gain.

Preservation

The inherent instability of carriers means that their content needs to be transferred to another carrier. Even if the carrier's life can be maximised, the technology required to reproduce it may not last. Ethical touchstones for audiovisual preservation include:

1. Maximise the life of both the original carrier and the associated technology.
2. Ensure format transfer while content is still intact and the technology is available.
3. Ensure the transfer - unchanged - of the content to the new carrier.

Presentation

The ethics of presentation is a large topic, but here are some principles:

- Audiovisual archivists engaged in presentation need to actively research and relate to their topics, so they can represent them accurately to audiences.
- Mythology and prejudice should be dispelled, not reinforced.
- If presenting material in a format other than the original (for instance, playing a CD reissue of an old recording) explain the difference.

Access practice - some operational considerations

As the point of public interface, access work involves constant judgement and the facing of ethical dilemmas. Some fundamentals are:

- *Providing information.* This means a proactive approach to doing what is possible, within available resources, to help clients maximise use of the collection.
- *Honouring agreements.* There is a legal obligation to honour copyright law, and written contractual agreements.
- *Risk taking.* Where you have access demands for material whose copyright and contractual status is unclear, the 'safe' solution is to do nothing – but is this an ethical response in a public institution? Some risk taking may be justified.
- *Rational rules.* Does your institution have clear and objective policies/rules for providing access? If so, are they observed? A clear, formal basis is needed.

Legal issues

Audiovisual archiving has a significant legal dimension. Because audiovisual works can have considerable monetary value as intellectual property, legalities have to be closely observed. There are penalties in law for the misuse of intellectual property, and an archive's integrity in this field is crucial to its reputation. Laws are usually country-specific: for example, copyright law.

It will always be important for staff members at an archive to have an adequate understanding of the practical aspects of the laws relating to the audiovisual material in their care. The development of electronic and digital technology has opened up new, easy avenues for copying and dissemination. Audiovisual archivists must operate within the law. An archive's reputation is an important asset. If it acts illegally or dubiously, it may be culpable in law as well as destructive to its own standing.

Correct courses of action are not always obvious. For example, copyright ownership for old material may be difficult to trace. Withholding access to this material may be legally valid but one may have to take a calculated risk - weighing the importance of access against the likelihood of locating the legal owner.

It will often become essential to seek professional legal advice in order to clarify rights, obligations, and the archive's precise legal position in dealing with its collection obligations. If you are not a lawyer yourself, establish a reliable source of advice to which you can have regular recourse.

Definitions of terms like contract, copyright, intellectual property will be provided in this chapter or in the glossary

Ways to handle legal obligations

The enormous amount of legal detail is manageable if it is dealt with in a consistent manner. Specific procedures may need to be created to meet specific needs. Typical methods used by audiovisual archives to manage legal issues include:

- initial agreements or contracts when acquiring/accepting audiovisual material into an archive should spell out the rights of all parties
- regular updating of records of ownership details should be undertaken
- a clear explanation of all conditions of access and reproduction should be provided before any access is given
- some archives also request that clients sign an indemnity form prior to the release of material when copyright or other ownership is unclear.

The basic principle is that the archive should establish its level of control over material in its care, along with that of all legal claimants to any interest in that material.

Copyright and intellectual property

This is a key issue for AV archives and will require careful presentation. The introduction of digitisation, and new avenues of distribution such as cable TV, DVD and the internet, has made copyright law increasingly complex. In many countries where the manual will be used, copyright law is rudimentary or even non-existent. The discussion material which follows is indicative of content rather than the likely final format of this part of the manual. This section will contain reference to key documents, agreements and protocols.

Background

Copyright - 'the right to copy' - is a legal mechanism for regulating the control and exploitation of intellectual property. It recognises that the creator of an artistic or literary work (e.g. book, photograph, music) has a right to control its subsequent use and duplication, including its commercial exploitation, for a defined period. Copyright law is the basis of the media industries and can be an extremely valuable asset.

A given work may embody several copyrights. For example, one feature film may involve copyrights in the script, music, musical performance, cinematography, still photography, acting performance, narration, editing, title art or animation, stock footage, among others. These copyrights may be of different duration.

Audiovisual archives do not usually own the copyrights to the material in their collections. It is sometimes impossible to establish whether certain works are still in copyright or in the public domain. Because audiovisual archives rely heavily on the trust

and confidence of their support base, their actions in this field - which sometimes involve difficult judgements - should be above reproach.

Control and exploitation of rights

Owners of copyright can exploit their intellectual property in several ways: sale outright, lease, or license. There is a difference between physical property and intellectual property. For example, for a pre-recorded CD the physical object is yours, but the content is not. An audiovisual archive may physically own items in its collection but not own or control the intellectual property they contain.

Public rights: moral, access, privacy

Other kinds of rights impinge on the concept of 'intellectual property'. With *moral rights* we recognise a concept of ownership and control which works on cultural assumptions quite different to those on which modern copyright law is based. *Oral histories* - the recording of the personal reminiscences of an individual - raise these issues because the recording is often candid and frank. Who owns the copyright - interviewer or interviewee? The moral right of *access to a public collection* may or may not have legal force but is usually assumed to exist. Do you, as a citizen, have the right of free access to your national heritage? Should you be required to pay fees in order to exercise that right?

Collection development and management

The process of seeking, negotiating and acquiring material to include in an archival collection is fundamentally linked to identifying the rights of both the provider and the archive. Some of the questions you need to consider are:

- who owns the physical item?
- is there intellectual ownership and if so who owns it?
- should your archive seek to acquire copyright as well as physical ownership?
- are any conditions placed on the acquisition difficult to honour?

If you ignore these questions, your archive may acquire material from someone who has no legal right to deal with you, and you will place your archive at risk of future legal challenge or charge.

The principle of **legal deposit** ensures that in many countries printed materials - books, newspapers, periodicals - are deposited for preservation in a public library or archives. Increasingly, this concept is being extended to audiovisual materials.

URL provided for the UNESCO Recommendation for the safeguarding and preservation of moving images in 1980. This issue will be elaborated: in some countries where the manual will be used, the law exists but it is not enforced or funded.

Preservation

Preservation is an ongoing series of actions. It may involve issues of:

- copying and ownership of any copies made for preservation purposes
- potentially enhancing an item via preservation - e.g. improving sound quality. Does this change the item, and if so, who owns the changed, enhanced version?

Unless preservation copying is expressly authorised by law, or failing that, by the copyright owner(s), this is - by definition - an illegal act.

Access

Copyright relates to many aspects of providing access to audiovisual material. Factors include:

- the wide range of potential users of audiovisual archival material
- uses of audiovisual material are multiplying all the time.

This ever-growing access environment means that archives *must* be aware of both the opportunities and the risks associated with releasing more and more material to, possibly, a world wide audience. Ill informed dealings with any of these user groups may place an archive at both professional and legal risk.

Chapter 3 – General audiovisual archive management

Classic functions and organisation structures

Four principal functions of activity are found in most audiovisual archives: collection development; collection management; preservation; access.

Some of the following may be best represented diagrammatically

Collection development

Collection development is the building, refining and shaping of the institution's collection. Collection development comprises:

- *Selection* - the intellectual process of deciding what to include, and what to leave out; it is usually guided by a selection policy.
- *Acquisition* - the process of gaining possession of the material which has been selected.
- *Accessioning* - the formal incorporating of the material into the archive's collection control system; involves identification, examining condition, preparation for storage, assigning control numbers, labelling, and creating control records.
- *Deselection, de-accessioning and disposal* – formal removal of material from a collection.

Collection development policies are very institution-specific. They are evolutionary documents and tend to change significantly over time as the institution develops.

Collection management

The essentials of collection management are:

- *Housekeeping*: keeping an inventory in good order with periodic stocktakes, observing appropriate shelving practice and physical care.
- *Occupational health and safety*
- *Staff training*
- *Movement control*: managing the two-way flow of material and tracking what is happening to it.
- *Environmental management*: maintaining and monitoring the fabric of the storage site and the functioning of the temperature and humidity control systems.

- *Maintenance and risk management*: monitoring what is happening to the collection; devising and operating risk management programs.
- *Security*: ensuring the security of the collection and storage site, and of collection material while it is absent from the store.

Preservation

Preservation is an integral component to nearly all functions of an audiovisual archive. For example:

- *Acquisition*: acquiring material in the most desirable technical format ensures the greatest long term integrity of the work.
- *Collection management*: all aspects of collection management impact on the longevity and retrievability of collection items.
- *Research*: for example, into the way audiovisual carriers behave over time.
- *Conservation and restoration*: removing the effects of time, wear and tear to return a work, as far as possible, to its original state.
- *Technical services*: operating technical facilities to copy carriers to an appropriate standard, to keep obsolescent equipment functional, to maintain essential skills.

Access

The purpose of all the foregoing activities is to provide continuing access over time to a particular part of the audiovisual heritage. Access activities are characterised as *proactive* and *reactive*. Proactive activities are initiated by the institution (for example, organising film screenings, producing publications, developing a web site). Reactive activities are services and facilities that you set up to allow your clients to pursue *their* agendas (for example, auditioning and viewing services for program producers or students, research and information services). Specific services or activities which operate under the umbrella concept of access:

- *Cataloguing*: Describing works in the collection in a way and to a level of detail which will help potential users take best advantage of the resource.
- *Services to clients*: this can include viewing and auditioning facilities, consultation, assistance in copyright clearance, provision of custom-made copies, etc.
- *Products*: the prepackaging of selected items from the collection in a mass-produced consumer format. Examples are videos, CDs, publications, CD-ROMs.
- *Broadcasting*: the licensing of collection items (copyright permitting) to radio and TV broadcasters.
- *Events and presentations*

- *Internet*: the net offers the potential to deliver high quality images and sounds to the place and time of the user's choosing, as well as text and other information.

Strategic planning and priority setting

Strategic planning is crucial to audiovisual archives. Because resources are limited, and skills and infrastructure grow organically, priorities must be set and strategies devised. Saying 'yes' to X usually means saying 'no' to Y. A strategic plan for an audiovisual archive would usefully contain the following elements:

- *Situation analysis* - background information, opportunities, threats, etc.
- *Mission statement and objectives* - clarifying and focussing the archive's mandate
- *Strategic analysis* - a plan with priorities and more detailed objectives
- *Business plan* - a hierarchy of objectives, action plans, performance indicators, time frames, resources, responsibility assignments, expected outcomes
- *Consequential plans* - a *training plan*, an *asset replacement strategy*, an *occupational health and safety strategy*, an *information technology plan*, etc
- The *budget* is informed by the above plans and resources are allocated in accordance with the priorities established in this way.

SWOT analysis

A good way of analysing an environment is through a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis.

interpolate diagram of a sample analysis

Budgeting

The nature of your budget will vary depending on whether your archive is an independent organisation in control of its own finances, or a department of some larger entity from which it gains both cash and resources in kind. Budgeting involves listing your anticipated real and in-kind income, and setting out how you plan to expend it over a given period (usually a year, but there is value in forward planning for, say, three years ahead.)

interpolate a sample budget

Developing policies

Audiovisual archives need to have clear and publicly available policies to guide their activities, especially in the areas of collection development, preservation and access. These explain what the institution does (and does not do), why, and how. Policies are a frame of reference for staff as well as users, and they need to be constantly reviewed to maintain their relevance as times and conditions change.

Pointers here to sample or model policies

Staff selection and people management

An audiovisual archive's most important asset is its people. Yes, its people – not its collection! All the normal skills of people management are involved - plus an extra dimension likely to arise from the nature of people employed in such work. Understanding and managing people is likely to make the difference between a competent archive and an outstanding one. Audiovisual archiving has characteristics which need to be noted:

- *Occupational health and safety.* Aspects of the work are potentially hazardous, such as the handling of film processing chemicals. Workplace design, fire safety and work procedure. Job design and task rotation are important considerations.
- *Training needs.* A structured approach to the personal development of staff members is essential both to personal growth and corporate skill development.
- *Commitment syndrome.* In audiovisual archives, committed staff inevitably work unpaid overtime and/or may be inadequately remunerated for the work they do. Their dedication is open to exploitation, and this raises ethical issues.

Training

This will be a major section, pointing to training courses currently available around the world, contacts for them, as well as to resources for self-development. It will also cover related topics like attachment, staff exchange, visiting experts etc as well as pointing to self-help resources. Further information has to be gathered before this section can be written.

Councils and boards

This section will briefly detail the role of councils, boards, advisory committees etc – some institutions have them, some would like to have them. It will comment on the desirable makeup of such groups.

External relations

This section will cover, in tabular form, the most important external relationship of an archive, and how to manage them. It will include funding authorities, other archives and institutions, stakeholders and the general public. It will point out the value of cultivating diverse sources of funding and support – avoiding the “all eggs in one basket” syndrome.

Chapter 4 – Buildings and infrastructure

Infrastructure development

An audiovisual archive requires an *infrastructure* to do its job. This includes both “front of house” public facilities and a variety of “back room” facilities as well as storage places for its collections. Most things on this list do not come cheaply, so here - as elsewhere - priority setting is essential.

A strategic view needs to be taken of the institution’s working context and opportunities to extend the effect of its resource base. For example, are there other institutions, in the same or neighbouring countries, that have infrastructure or skills which your institution can use economically?

The external appearance of the archive – does it have its own building, or a distinctive entrance proclaiming its name – is itself strategically important. It sends a message to all who use it, and the message should be sent consciously. Does your archive *look* like a substantial and trustworthy operation?

An archive’s “spaces”

This section will detail the main ‘standard’ physical spaces in an archive, including:

- the collection repositories and adjoining rooms*
- examination and repair areas*
- staff areas for cataloguing, research and administration*
- public spaces for screening, presentations, exhibitions*
- private viewing/auditioning facilities for clients and researchers*
- library/ documentation areas for research and public access*
- specialised spaces for technical equipment, such as computer, copying and restoration facilities*

as well as the physical interaction between these spaces.

In general terms it will cover broader questions, such as siting of the building (within reach of services and away from unnecessary humidity etc.) and storage strategies, such as the physical separation of preservation and access copies.

Small and underfunded archives are likely to lack many of these spaces and will need to improvise. Ways of improvising will be explored.

Technical specifications

This section will set out, probably in tabular form, the main standard requirements for each of the above spaces – such as temperature, humidity, magnetic influences, presence of dust and pollution, 24-hour electricity and so on. It will also set out structural recommendations, such as wall, ceiling and floor insulation for repositories.

Small/ underfunded archives are unlikely to be able to meet standard requirements so, again, improvisation options will be explored. What do you do with an intermittent electricity supply? How do you keep dust out?

Environmental issues

General “ideal” environmental conditions needed for different types of carriers will be tabulated. Reference will be made to a variety of external reference guides, easily obtainable.

Most importantly, the realities of non-ideal storage situations will be discussed. How can one make the most of available storage – for example, an airconditioned room, or a non-airconditioned space? How does one deal with storage in a building where airconditioning operates intermittently? How can one best “buy time” till something better is available?

Repository design and management

The purpose here would not be to give detailed specifications for purpose built repositories (which could be misleading because they are always specific to circumstances and location) but to set out general principles and make the point that purpose-built repositories need to be carefully researched and that there are many sources of information to tap.

It will also give some general guidance on how to arrange a non-purpose-built space to best advantage for collection storage.

Equipment

Again, this section will recognise the ideal, but deal with the pragmatic. Many archives have to make do with recycled shelving or other expedients, and with second-hand and very basic technical equipment. Many lack access to the services and infrastructure for maintaining/ repairing projectors and viewing tables, video recorders and players, cooling and refrigeration equipment and other facilities, and as far as possible need equipment which they can maintain themselves – or local organisations, such as television stations, with which they can form working alliances.

Chapter 5 – Collection development

Collections exist because the bringing together of related items - be they books, records, objects, videos, computer files, matchbox labels or anything else - offers possibilities that would not be available if the material remained dispersed or unrelated. These possibilities range from improved accessibility and improved chance of survival and protection to the convenient organising of information and maximising the efficient use of resources. Collections have been a feature of society since the dawn of history, inexorably increasing in size and complexity. Collections may be private (in the hands of individuals or families) - or corporate/institutional (in the hands of organisations).

Collections normally have an underlying motivation or rationale, though these can be exceedingly diverse. A private collection may simply reflect the tastes and interests of the individual collector: an institutional collection may have been shaped by history, circumstances, opportunity, geographic location, or formal policy. Collections may be regarded as 'complete' - fixed in size or content - or 'dynamic', growing or shrinking and changing in content.

Collection development

Collection development encompasses:

- *selection* - the choosing of additional items in accordance with the policy, rationale and resources of the collecting individual or organisation
- *acquisition* - the process of gaining possession and/or ownership of these items by purchase, gift, exchange, deposit or other means
- *deselection* - the decision to remove an item from the collection for any reason
- *disposal* - the process of divesting the item, for example by sale, gift, destruction or other means.

Collections of audiovisual materials - films, discs, tapes, cylinders - have particular technical, physical and chemical characteristics which bear on their management, survival and accessibility. They also have particular conceptual and intellectual characteristics which govern their use and usefulness.

Creating a policy

This section will explain why it is important to have a publicly declared policy covering these four areas. It informs. It provides public accountability. It discourages arbitrary action. It is a guide for the staff concerned, encouraging a rigorous and consistent approach to selection judgements and providing a frame of reference. It will describe the elements of good policy: a clear purpose, stated assumptions and principles, stated procedures, and their application into practical guidelines.

A “template” policy will be set out as an example and guide. For young archives, policies should be simple but also rigorous and practical.

Useful reference points, such as examples of existing policies in archives, or selection policies of UNESCO programs like “Memory of the World”, will be cited.

Making selection/ deselection judgements

This section will provide practical hints on how one decides to select, not select or dispose of material whether on the basis of content, context, association, technical character or otherwise.

Acquisition and disposal practice

This section will look at procedures and methodologies including the related legalities. It will include the methods of donation, voluntary deposit, purchase and – where appropriate – legal deposit.

Examples of pro-forma contracts for each method will be included as a guide.

Relationships

This section will discuss the importance of developing and maintaining good relationships, both formal and informal, with those organisations and individuals who are the suppliers of collection material. These include broadcasters, production companies, distributors and retailers, and private individuals, including collectors.

Creating collection material – oral history and other recordings

This section will deal with instances where archives choose to create documents for their collections – most usually in the form of video or oral history. This is a large topic – it deserves a manual in its own right – and there will only be room here for the essentials. These include researching, preparing for an interview, recording the interview, ethics and etiquette, selecting formats, transcribing, negotiating and recording clearances.

Examples of relevant proformas will be included, including sample contracts establishing accessibility arrangements.

Chapter 6 – Collection management

Principles of collection management

In a collection of any significant size, items need to be arranged systematically if they are to be found and retrieved, and their security monitored. Further, the system needs to be matched to the nature of the items and the kind of use made of them. For example, in the library context the Dewey Decimal Classification system allows books and periodicals to be grouped according to subject matter, which helps readers browse the collection. In the archives context the principles of provenance and original order are used in the arrangement of archival materials. These principles denote that the archives of one person or organisation should not be intermixed with those of another person or organisation, and that, where possible, the original order in which the materials were used in the conduct of business should be retained.

Large audiovisual archives use a computerised system which permits arrangement of the collection according to the varying environmental needs and physical attributes of the items, as well as their accessibility status. The database can be browsed according to subject matter, and the threads of provenance and original order can be retained in the audit trails and contextual information in the database.

Audiovisual materials can be arranged in a variety of ways depending on the purpose and use of the collection. For example, in a self-service library environment, videocassettes can be interfiled with books in a classified order using Dewey Decimal Classification or Library of Congress classification schemes. In a television station production library, cassettes and tape reels may be filed by a production number, date or other system matched to the station's in-house retrieval needs. In a collection arranged for archival preservation purposes, the system may be different again, and include means of identifying the format, status, technical character and environmental needs of each item. It will also recognise the principle of **paralleling** – dividing the collection by the status of each group of carriers (for example, preservation copies, duplicating copies, access or release copies and so on)

Audiovisual carriers come in an ever-increasing range of formats and sizes, encompassing the various videotape and audiotape reel and cassette systems, the digital compact disc in its audio, video and multimedia configurations, various gauges of film carrying a variety of screen formats and sound systems, together with now obsolescent carriers such as laser discs, the vinyl and shellac analog discs and - even earlier - the Edison-type phonograph cylinder. This has an impact on collection management and organisation and may involve the following elements:

- *storage* - how to safely, efficiently and conveniently accommodate items of so many different shapes and sizes
- *packaging* - carriers come packed in a huge range of paper, cardboard, plastic and metal containers which may or may not be suitable for collection storage or use

- *shelving and labelling* - whether to store vertically or horizontally, and how to identify each carrier and package
- *preparation* - incoming material may need to be cleaned, rewound, repaired or examined before shelving
- *handling* - procedures need to account for the sometimes fragile physical nature of audiovisual carriers
- *management system* - the methods used to maintain the good order, efficient use and movement of items comprising the collection
- *stock control* - a similar but broader concept which can also embrace the management of 'raw materials' such as stocks of blank tapes, or the acquisition, disposal, erasure or recycling of audiovisual carriers or packaging materials (TV stations, for example, might style their in-house archives as part of their 'stock' or asset base)
- *intellectual control system* - documenting the content of the collection, including systems for accessioning, cataloguing, indexing, and classifying as well as finding aids such as guides, inventories, lists etc.
- *oversight* – some system of regular monitoring and sampling of the collection to check deterioration over time is basic to ensuring the collection stays 'healthy' and that problems are detected early

Audiovisual carriers have two important characteristics which have a significant influence upon their management. First, many have a limited shelf life: they are subject to many kinds of physical and chemical degradation which can limit their useful lives - in extreme cases, to just a few years. The degradation can be slowed and minimised by appropriate storage, maintenance and handling practices such as periodic rewinding of films and tapes, and storage in a range of low temperature/low humidity environments. Second, rapid technological change means that today's audio and video products may not be playable on tomorrow's technology. Take for example wax cylinders, and 2 inch videotapes. Although the cylinders or tapes might be in good condition, the playback technology has long since been superseded. Hence, the content must either be copied to newer formats (before it is too late) or the 'old' technology must be maintained. Both characteristics can involve cost/benefit tradeoffs which in turn raise ethical and practical issues.

While everything said above is properly characteristic of a well run and diverse AV archive, many of the archives for which the manual is intended will have neither the range of material nor the means to apply these principles in the manner of a large and sophisticated archive. The principles will need to be further developed to take account of this reality.

Practicalities

This will detail some overall practical issues, such as coping with unorganised backlogs and temporarily storing material in bulk. It will also survey those aspects of collection management – such as good organisation, numbering and disaster preparedness – which are not cost dependent and can therefore be practised by all archives.

Housekeeping systems

This will discuss the principles of numbering and physical control systems for AV collections. As a discipline, a good system is not cost-dependent: it just requires consistency and common sense.

Practical examples of numbering and control schemes will be given.

Packaging and handling

There are recommended standards for the housing of AV carriers – for example, film cans, videotape cases, record sleeves and so on. Well resourced archives observe these. However, users of this manual will probably have to make do with much less than the ideal. This section will cover pragmatic suggestions for available containers, and good practice (which is not cost-dependant) in preparing tapes and films for storage irrespective of the nature of their containers.

Disaster preparedness

Disaster preparedness, in this context, involves observing some commonsense rules about locating the most precious items in the collection, about identifying possible threats and emergencies and being ready to meet them. The preparation of disaster preparedness plans will be discussed and a template suggested.

Access and security

Physical access to the collection, and its security, are two sides of the same coin. Controlling who may enter, the locking of the storage area after hours, the documenting of material as it arrives and leaves, are part of this topic.

Obsolescent carriers

A listing of the obsolescent carriers most likely to come into the hands of these archives with suggestions about handling and seeking further advice.

Chapter 7 – Conservation and preservation

Defining preservation

Audiovisual **preservation** is defined as the totality of things necessary to ensure the permanent accessibility, with minimum loss of quality, of the visual or sonic content or other essential attributes of the work concerned. It covers such things as access feedback, examination, conservation, repair, restoration, copying, surveillance, collection management systems, storage environments and methods, and more.

In this chapter there are many connections to be made with other information sources, e.g. 'Memory of the World' Guidelines and CD ROM, IPI calculator, several literature sources; resources produced by individual archives such as Nederlands Filmmuseum CD ROM on restoration etc. In the final CD ROM version of this manual there is much scope for including animated clips, footage and audio samples etc. to illustrate certain problems, techniques or issues

Introductory

Some audiovisual collections may not require preservation in this sense. Their policy and purpose may be to meet a current user need, to be fluid in content as new material is acquired. In this situation worn or outdated material is often deleted. The aim of the organisation might be to maximise carrier life - and thereby get the greatest cost/benefit from the collection - but not venture into the other costs and practicalities of preservation.

At the other end of the spectrum, some collections may be so focussed on preservation that access for the time being may be largely unavailable since materials are not exposed to the risk of usage. Most archives operate between these two extremes and in doing so must accommodate the sometimes competing and dynamic demands of preservation and access.

Buying time

It is easy to feel overwhelmed by the complexity of technical issues involved in preservation, restoration and copying, or by the inability of one's institution to match currently recommended "ideal" specifications. Even among the world's largest and most sophisticated AV archives, few are able to boast an "ideal" situation in all aspects of storage or technical capability. Most have to find the best compromises they can for the present, leave options open and work towards better or cheaper future solutions than those currently available.

The same strategy of “buying time” holds true even for the youngest archives or those with minimal resources. You cannot do the impossible. *You do what is presently possible to maximise the life of your collection and work towards a better resourced future.* Even the simple act of collecting and storing material that might otherwise be lost or destroyed *is an act of preservation.*

Principles of preservation

Careful documentation and collection control - “good housekeeping” - is a precondition for preservation, and is staff-dependent but not inherently costly. A collection inventory, including basic technical descriptive and condition data, including description of deterioration, can be developed down to the level of individual carriers. It may be in manual or, if available, computerized form¹. It permits secure management and retrieval. If repair, conservation or copying action is undertaken it is important to document what was done, when it was done and which carriers were affected. Good documentation and collection control takes time and discipline, but it saves unnecessary losses and double handling.

sample formats for inventories, including a list of minimum data, can be added here in list or table form

Storage environments – including temperature, humidity, light, air pollutants, animals and insects, physical security – affect the useful life of AV carriers. The “ideal” requirements vary – colour film, black and white film, magnetic tape, CDs, disks and paper all have different “ideal” needs (even if the “ideal” is a continuing area of professional discussion!) Unfortunately, few archives enjoy such facilities, so it is a matter of doing the best with what is available. Factors such as leaking roofs, broken windows, unstable foundations, fire detection/ suppression systems, disaster preparedness and environmental monitoring are all relevant. Good management and surveillance practice can still be applied in less-than-ideal conditions.

Here interpolate a table of “ideal” conditions and, on the CD ROM, a lifespan calculator.

Prevention is better than cure. Practices and techniques that slow down deterioration and potential handling damage are far better and cheaper than any recovery process. Not the least of these is the observance of good storage, handling and shelving procedures, good security, and care in transport.

Here, or elsewhere in this chapter, provide an indicative list of basic equipment such as film rewinders and video players.

¹ Standard computer formats, such as MARC, or the UNESCO ISIS software (available free), or others recommended by professional NGOs, allow the organized entry and manipulation of data, and data exchange with other institutions.

Conserving originals. Historically, many archives have made the mistake of making new preservation copies and discarding originals, and then discovering that they have lost information they cannot recover, or closed off future options. Even when you make new copies, regardless of the technology, keep the originals as best you can for their useful life. Originals may have intrinsic worth that will never accrue to a copy. New technology in future may offer higher quality copying options that are presently unavailable. The new copies may prove to have a shorter physical or commercial lifespan than the originals from which they are made. Originals should be discarded only when they have reached irrecoverable physical degradation. (Case examples as footnotes).²

Content migration or reformatting – copying onto a different format – is useful and often necessary for access purposes. Access copies of any kind reduce pressure on the preservation copy. However, content migration should be approached with caution as a preservation strategy. It is sometimes unavoidable: for example, when the original carrier has become unstable. But it often involves the loss of information and the closing off of future options, and may open up unpredictable risks in future when the copying technology used becomes obsolete. This caution applies to newer approaches – such as digitization – as well as older ones, such as photographic reproduction.

Putting long-term preservation at risk in order to satisfy short-term access demand is always a temptation, and sometimes a political necessity, but it is a risk that should be avoided if possible. In cases when there is no duplicate access copy, saying “no” is usually a better strategy than exposing a fragile original to possibly irrecoverable damage.

One size doesn't fit all: different types of carrier not only require different types of storage environments but different methods of handling, management and conservation treatment. Traditional “human readable” materials, such as printing on paper, are increasingly complemented by “machine readable” documents, such as computer disks and videotapes, whose survival and retrieval are dependant on technologies with rapid

² Case examples:

- Film archivists thought for decades that cellulose nitrate film (the type of film stock in common professional use until 1952) had a limited life because it was highly flammable and chemically unstable. They thought that all cellulose nitrate film should be copied onto newer, non-flammable cellulose triacetate ‘safety’ film before the year 2000. However, nitrate film stored in low humidity, low temperature environmental conditions can last much longer than first estimated, while triacetate film can be unstable, especially under high temperature, high humidity conditions (this phenomenon, ‘vinegar syndrome’, is now a serious problem). Changes have been made to how nitrate film stocks are managed - essential copying is now done on to polyester film stock, and many archives now have triacetate copying programs to complement their nitrate copying programs.
- The CD (Compact Disc) was initially marketed as being everlasting. Many people still believe this. Experience and research on the CD's lifespan shows that some last less than 10 years, though the maximum time they will last is unknown. But even if the CD carrier lasts for many decades, the recording and playback technology may not. When the commercial industry no longer supports the format, will audiovisual archives be able to?

obsolescence. Each requires its own kind of vigilance. The development of agreed international standards – for example, for the transfer of digital data – often lags behind the speed of technological change, but where ISO and other standards exist they should be observed.

Cooperation is essential: In such an increasingly complex field, even large institutions find the need to network, to share facilities and expertise. Some institutions develop specializations so they can service other institutions cost-effectively. In preservation, no one can afford to be an island. Developing co-dependencies with other institutions can be an effective way of spreading expenses and skills.

Traditional knowledge: AV archiving methods have often developed from a scientific understanding of the nature of AV materials and the mechanisms of deterioration, and come from a “western” mindset in which assumptions about infrastructure and skills availability are unconsciously made. These assumptions may not necessarily apply in other countries and cultures, and sometimes there are traditional skills and approaches (such as in paper conservation) which can be more appropriately used. Lateral thinking and imagination often pays off.

Obsolescence and format progression

Because audiovisual media are recorded and reproduced through technical devices, they are exposed to the effects of format progression: the constant displacement of the old by the new. When the commercial life of a particular format is ended, it must still be supported within the archive, or all material on that format must be transferred to a new format. However, the repetitive transfer from old to new formats is neither desirable nor cost-effective, even if it is possible.

Successive copying also involves progressive loss of image and sound quality when copying analog-to-analog or analog-to-digital. In theory this does not happen when copying digital-to-digital, although there are other complicating factors, such as the cumulative effects of differing signal compression standards, or the obsolescence of software, that may result in a similar effect.

The dilemma is compounded by the youth of so many formats: only experience and observation over time can show how a particular carrier behaves, yet choices (e.g. which format to standardise on? which process to use?) must often be made before such experience has accumulated

This topic needs to be developed with specifics, for many archives will hold formats which they cannot now play.

Handling, inspecting and processing

There is a variety of manual skills involved in handling AV carriers: film examination, winding, repair; disc examination, cleaning and sleeving; tape winding;

CD packaging and so on. Some are simple, manual and inexpensive; some are more technology dependent and might involve an archive forming relationships (for example, with a television broadcaster) if it does not possess the technology itself. The manual would spell out a number of rules and recommendations, could demonstrate certain things diagrammatically or by live action (better done in CD ROM than in hard copy). The question of repair and packaging consumables (such as film cement, splicing tape and record sleeves) would have to be dealt with in a practical way.

Processing: playback, projection, cleaning, restoration and copying

Here we move to the use, manipulation, treatment and reproduction of material. This is a very large topic. The manual will concentrate on processes likely to be within the capability of young/ underresourced archives and will have to deal with larger questions like: how do you recognise the limits of your capability? How can access copies be made cheaply? What processes are dangerous/unwise to attempt with limited means? Where do you turn for help?

Chapter 8 – Cataloguing and access

This chapter covers access activities and the process of cataloguing, which is the means by which a collection is initially made accessible.

The purpose of accessioning and cataloguing

Definitions of “accessioning” (the process of physically adding carriers to a collection inventory, assigning identification and location numbers, recording physical attributes and condition) and “cataloguing” (the intellectual description of content, in a way designed to aid accessibility), and the purpose of each.

Both activities are consumers of staff time, but are not inherently costly in a financial sense. Productivity is directly related to the number of staff (or volunteers) involved.

Registration/ accessioning

Works through the practical steps involved: receipt, examination, repackaging as necessary and possible, identification and labelling, creation of manual or computer records. Accessioning comes before cataloguing and is essential for the physical management of a collection. Cataloguing is a subsequent process, in which priorities can be more flexibly set.

Cataloguing methods and systems

The process of viewing/ auditioning/ research and writing of entries is described, and the options of long and short entries is explored. Cataloguing is a professional discipline requiring a meticulous, logical and consistent approach and the observance of standard rules. Many archives, however, will not have the benefit of trained cataloguers on their staff and will have to resort to the best available alternatives.

Reference is made to published standard cataloguing rules (AACR2, FIAF rules, IASA rules etc) and the availability of cheap or free software such as CDS ISIS. Cooperative schemes such as the ASEAN database will be covered and sources of assistance will be identified.

The essentials of a basic entry can be described to assist staff who are not trained cataloguers but who will nonetheless need to undertake cataloguing work.

Multi-lingualism

Obviously catalogue entries are language-specific and are created in the language or languages most directly useful to each archive – usually the national language of the country concerned.

However, the usefulness of a catalogue is limited by the size of the language group, and in an age where access demand is potentially global and on-line catalogues are increasingly normative for large archives, there are long-term strategic issues to consider. The possibility of multi-lingual cataloguing – creating entries in both the national language and one of the more widely used languages (English, French, Spanish, Russian, Arabic, Chinese) if different – should be considered or planned for.

Access - proactive and reactive

The purpose of all work undertaken in an audiovisual archive is **access** - either now or in the future. There is no point in keeping a collection item unless there is an expectation that it will be used.

The audiovisual media are, by definition, deliverable in a variety of ways and can be accessed on site (where the collection is located) or remotely (if facilities are available for loan or transmission). Access can be *reactive* – that is, directly client-driven through the searching of catalogues and databases. Or it can be *proactive* – driven by the archive through a variety of entrepreneurial initiatives, ranging from video releases and broadcasting to travelling exhibitions, film festivals and the via the internet.

It is in the nature of the audiovisual industries that huge investments are sometimes involved in the production of films, television and radio programs or CDs, and therefore copyrights are jealously guarded. Even at the pre-production stage, when scripts are written and archival collections researched, ideas and concepts have ‘commercial in confidence’ status and must be treated as such by all who deal with the relevant access transactions. The legalities and ethics of access are therefore a major operational consideration for the audiovisual archivist or similar professional.

In relation to larger collections, the Access officer operates as a consultant and guide through a very complex resource, so this person needs a depth of collection knowledge, public relations skills, creativity and, increasingly, entrepreneurial and commercial acumen - that is, insight into identifying and exploiting commercial opportunities.

Reactive access

This section will survey the process of responding to client enquiries and managing client relationships. The legalities and ethics are covered in another chapter of the manual: here the interactive process is unpacked by following through a couple of typical types of client enquiry – one from a member of the public with a simple request, another from a television producer with more complex needs.

Proactive access

The main types of proactive access available to archives are discussed – these include publication, public screenings and exhibitions, broadcasting and product creation. These

entrepreneurial activities involve creative thinking, curatorial integrity, and subject knowledge. They also require, to varying extents, the skills and instincts of the showman. Some of these activities have revenue raising potential and involve business decisions as well as legal research: for example, making old films from a collection available for release on television or on VCD.

The issues of promotion and publicity, which bear closely on these activities, are discussed in another chapter.

Chapter 9 – Documentation and artefacts

The rationale

It is normal and necessary for AV archives to collect “associated materials” – documents and artefacts which provide context for the moving images and recorded sounds which lie at the centre of the collection. This gives AV archives something of the character of both a library and a museum. This rationale will be unpacked here and the philosophical basis referred to.

Range of materials

The range of materials will be discussed. These can vary from country to country but typically can include vintage equipment like gramophones, projectors, cameras, television sets and video players; production materials such as scripts and drawings; publicity materials like still photographs, posters, press sheets and promotional gimmicks; costumes and props; music scores and manuscripts.

The common feature of selecting this material for an AV archive is that none of it is collected in its own right: it is selected because of its intrinsic connection with particular films, programs, recordings or personalities, or with the phenomenon of moving images and recorded sound per se and its industrial, artistic and social character. This governs the way the material is documented and presented.

Selection, acquisition

As for films, programs and recordings an articulated selection policy is essential to guide what must necessarily be a selective approach. Acquisition follows the same principles as well. Sometimes documentation material on a film or program will survive where the actual carriers do not.

Management

This section will deal with the principles and practicalities of storage and management of the principle types of materials. Paper materials call on the same skills and needs as typical library collections; artefacts and textiles on those of museum collections.

Given that sophisticated storage and conservation possibilities may not be available, a practical guide to storage and handling of the main materials will be offered. Accessioning processes vary according to the type of material.

Much of this material lends itself to display in exhibitions, so commonsense questions of security and conservation also arise.

Cataloguing and access

Given the nature of the materials, these practices are both similar and different! The fundamental principles are the same, but the descriptions vary according to the type of material.

Chapter 10 – Current issues

Introduction

##This chapter will deal with a range of current interest topics that are not picked up in the generality of the manual. The following list is simply indicative: there are likely to be more and/or different topics.

The invention of the personal computer and computer networking in the 1970s was the beginning of a revolution in communications. Now, the digital age and the information superhighway allow previously unimagined possibilities in the delivery and manipulation of images and sounds. They have also created entirely new forms of expression in which image, sound and text can be combined and delivered selectively and interactively. Audiovisual archivists need to maintain awareness of the rapid changes, and to respond to the acquisition, preservation and access questions which the superhighway creates.

Yet we live with apparent contradictions. The digital future is still opening out before us and we have yet to see what further twists and turns it takes. Some things now familiar to us may prove transitional: for example, will the CD ROM retain its current visibility?

Think about this. The technology and presentational setting of projected motion picture film is essentially the same today as it was more than a century ago. It has survived the competitive pressures of home movies, television, videocassette, video disc, and - most recently - the Internet. Today there are probably more cinemas in operation worldwide than ever, and the industry continues to grow. At the same time, audio without pictures – sound recordings and radio – have survived all predictions of their overshadowing by image technologies and are stronger and more pervasive than ever.

Digitisation

This is now one of the great buzz-words, widely used but much less widely understood, hailed as a panacea for all sorts of dilemmas affecting archives. It needs to be unpacked in the manual so archivists are in a position to respond to inaccurate assumptions.

The future of film

Will film still be as widely used a decade from now? Will it be supplanted partly or entirely by electronic means of production, distribution and exhibition? Will companies like Kodak and Fuji discontinue the manufacture of film stock? Will the impact be uneven around the world? Will it be important to conserve film collections even if manufacture has ceased? How can archives adjust to new technology?

Handling obsolete formats

The phenomenon of obsolescence – which is getting rapidly worse as formats multiply, and it becomes harder to choose those likely to sustain a reasonable period of support from the industry – needs to be explained and some dilemmas tackled. What do archives do with formats which they have collected but can't play? How do they choose which formats to try and standardise on? The question of format progression may mean acquiring and maintaining working examples of vintage hardware and software.

Multimedia

Once-clear boundaries are now blurred by new technologies and the internet: the mix of audio and moving image with text and graphics, the phenomenon of video and computer games. What do archives collect? How about preserving websites? What is the value of multiple media archives – covering film, video, audio, broadcasting etc – as opposed to “single media” archives concentrating on a narrower spectrum.

Analog vs digital

What does this dichotomy mean and why does it matter? For instance, how do film images and video images differ? Is something lost when transferring from one to the other?

Carrier vs content

A common assumption is that “content” is independent of “carrier” – but it's not necessarily so. When is it important to emphasise and demonstrate that link, and therefore to ensure that original carriers are preserved and accessible?

Migration

Continuous migration of content from obsolete formats to newer ones sounds fine in theory but is expensive and often impractical in reality. Why? And what are the alternatives?

New materials, new works

We have to consider new works in collection development policies. These might include video/computer games, CD ROMs, ‘snapshots’ of selected Web sites, video conferences, and ‘born digital’ productions. How to acquire them raises new issues.

Digital access

Digital technologies are already being used by many institutions to deliver access services. Some examples:

- *Catalogs and databases are already available on CD ROM or on Websites, and can include digitised sounds, and still and moving images.*
- *Electronic commerce opens the way for easier, and faster, access transactions.*
- *Sending of text and other documents over the Internet via e-mail or web sites is now firmly established practice.*
- *On-line delivery in real time of high quality moving images is technically possible now, though an affordable infrastructure is not yet with us.*

Some or all of these may presently be out of reach of small and underfunded archives. But they are real, and awareness needs to be developed.

Chapter 11 – Growing support for your archive

Many of the following topics can be expanded – in some cases considerably so – and examples or diagrams can be added (for example of a typical swot analysis for a mythical archive)

Introduction

Audiovisual archivists are not just acquirers and managers of collection material. They have a role *outside* their archives - as advocates, persuaders, strategists and activists. They have to create and develop the environment within which their archives can grow and be secure within their particular cultural context. They have to obtain the resources their archives need. They have to interact with other ‘stakeholders’ – clients, suppliers, sponsors, government officials and politicians, producers, collectors and so on. In other words, they have to develop the *support base* of their archive.

Through the careful promotion of its work, the archive may engage the support of large sections of the public. Successfully communicating the realities of audiovisual loss and survival can motivate a considerable depth of public sentiment. A strong support base is the best answer to those who question the value, validity or priority of an archive’s work. It also helps keep the archive in touch with its constituency.

It is very hard to be a successful advocate for something you do not believe in. There must be a *conviction* to sustain the *enthusiasm* and the *perseverance*. It can be hard work to be an advocate for change, for new priorities, for a new course of action or a new paradigm. It can test personal resolve and self esteem. (Support bases are important for psychological as well as political and monetary support!). But it does lead to success: the experience of history confirms this.

Reading the “environment” of your archive

This means analysing your situation objectively - looking beyond the obvious and resisting the temptation to judge anything on face value. The elements in your environment might include:

Attitudes: What real value is placed on the work you do by other stakeholders? You need to know these before you can work on changing them – if change is needed.

Moods and movements: What can you detect about popular sentiment and current moods relevant to your work? Do you go to the forums and events where your stakeholders go so you can find out what matters to them? Being proactive is usually the most successful course.

Opportunities/ threats: Doing a SWOT analysis (listing Strengths/ Weaknesses/ Opportunities/ Threats) is the classic way to try to understand your environment at any

given time. A SWOT analysis can be very detailed and lengthy, and be a vital tool in formulating strategy.

In what direction are you travelling? A SWOT analysis describes where you are at a point in time. Two points to note here are:

- the external context is constantly changing - 'constant change is here to stay'
- people, and organisations, naturally gravitate to 'comfort zones'!

Allies, friends and barometers: Every institution needs them. How do you recognise them? Look around for those who will benefit from or take satisfaction in your success, or are willing to give constructive criticism.

Developing a support base

It is important to identify your supporters and stakeholders and keep them informed about your work. Your support base will be a unique grouping of people and organisations to whom your archive matters now, or may matter in future, and who might be willing to express their support in various ways. They have a 'stake' in your success. They might, for example, include:

- academics – lecturers and students
- current or potential sponsors
- volunteers who can supplement the efforts of your paid staff, and offer skills that you need
- people in the industry: actors, producers, directors, other creative and managerial personnel
- government officials, staff and stakeholders of kindred institutions and their professional associations
- journalists and media personalities
- politicians, public figures, community leaders
- people who supply or donate material for your collection
- informed members of the general public
- users and researchers
- international bodies

Structures

In their totality, support bases are diverse and therefore not structured in any formal way. But sometimes structures can be very useful as a way of organising support towards a goal and achieving collective outcomes. Here are some examples:

“Friends” groups

Formal organisations of “Friends” are common features of archives, libraries and museums. In some cases they may be dependent structures set up by the institutions

themselves; in other cases they may be quite independent organisations with a declared charter of support for their institutions.

Each model has both advantages and disadvantages and the choice should depend on the context and the need. For example, an independent body is probably in the better position to function as a lobbyist or activist, and as a constructive critic of the archive itself (sometimes providing a healthy reality check). A dependent body may be in a better position to mobilise volunteers to multiply the efforts of paid staff.

In both cases, the important thing is the existence of a structure which allows supporters to express themselves, and makes a particular group of stakeholders politically visible. “Friends” groups can also take on some of the character of professional associations (see below) and be an important sounding board for the staff of an archive.

Volunteers

It is also common for libraries, archives and museums to develop a roster of volunteers. This can allow more options for the allocation of paid staff.

Volunteers can be people of all ages and backgrounds who may have both time and skills to offer to your archive. For example, retired film or television industry technicians can offer their accumulated experience to young staff. Others with discretionary time available may be willing to do processing work such as accessioning or examination.

Volunteers should be selected in the same way as paid staff: they should be matched to their allotted tasks and, if necessary, given training. It is also important to formally recognise their voluntary effort in some way.

Loyalty schemes and memberships

Some archives offer membership, loyalty or similar schemes to users and supporters. Typically, a periodic fee is paid and, in return, access to certain services and benefits is provided. These may include the use of certain material in the archive’s collection, and free or discounted admissions to events like the archive’s screenings, and/or cut-price access to goods or services (like books, videos, CDs or cinema admissions) offered by sponsors who have joined the scheme as a gesture of support to the archive.

Professional associations

These are important sources of practical and moral support, especially if one is in an isolated situation. Associations exist at the international, national and sometimes local level. They offer professional networks – whether in person or electronically – and sources of advice.

Readers of this manual are most likely to be aware of *SEAPAVAA* (www.geocities.com/seapavaa), which is a regional international association. There are

several others which operate in different sectors of the international audiovisual archiving field. At the national level, there are in many countries professional associations of librarians or archivists who offer useful networks and forums for discussion and practical assistance.

Other international organisations

UNESCO (www.unesco.org) is an important reference point for audiovisual archives. It has working relations with hundreds of NGOs (non-government organisations), some of whom may offer useful avenues of assistance to your archive. It produces many publications which are standard reference points in the field. It has specific mechanisms for offering financial assistance which need to be studied and understood in order to use them effectively – your national commission for UNESCO is the starting point.

ASEAN-COCI – for ASEAN countries the ASEAN Committee on Culture and Information is an important reference point for funding and other assistance. Each country has a national reference point for COCI.

Publicity and promotion

Publicity and promotion are skills which any audiovisual archivist can develop. Some avenues for publicity which have been effectively used by many archives include:

Radio talkback: a live interview, with some well chosen sound bites from the collection, can be attention grabbing and can reach enormous audiences.

TV chat shows: these, like radio, can reach enormous audiences, with the variation that you can convey visual messages and use film clips.

Press articles, editorial coverage: like radio and TV, this is free publicity - if you can gain the support of the editor!

News stories in the media generally: important here is the ability to pick stories (say, an important acquisition, the visit of a famous personality) which are newsworthy.

Symbols and slogans: an attractive, well designed slogan and logo can be surprisingly effective and pervasive and do not cost much to create!

Web page: increasingly, a good web page is an essential information resource for institutions with a story to tell, if this option is available to you. A web page provides international accessibility; they can be kept constantly up to date; they can deliver images and sounds directly to clients.

Lobbying

Lobbying means advocating your point of view to those who are in a position to influence outcomes. What does the person being lobbied need from you in order to support your agenda? Some suggestions:

- A clear, succinct but sufficient explanation of the issues
- Honesty and accuracy
- A reason for supporting your case
- A solution rather than a problem
- A win/win outcome (if they back your proposal, they don't want to create an equal and opposite problem by depriving someone else).

An important aspect of lobbying, like cultivating a support base, is consistent persistence!

Networking

A personal network is simply the sum total of the people you know and to whom you can turn for ideas, advice, reactions and information. It is rather like an extended family. Like a garden, it takes time and care to cultivate a good network – to regularly keep in touch with people – but it costs almost nothing. One accumulates a network over time just in the normal course of daily work: they may be people you interact with on a daily basis, participants you met at a conference or training course, people whom you have deliberately sought out for advice or help.

Members of your network may be in your town or city – or on the other side of the world. Those you cannot talk to easily in person you can stay in touch with by fax or email.

You can also participate in “ready made” networks – such as email listserves, news groups or other forums – which in turn may lead to useful relationships. These are usually free to join though they require access to a computer terminal and the internet.

Fundraising and sponsorship

Raising money is hard work and often discouraging, but it is a field in which research and persistence is rewarded. Around the world there are a surprising number of organisations and foundations willing to provide support, in cash and kind, for worthwhile projects. They don't usually have to advertise the fact: it is reasonably assumed that you will come looking for them!

Foundations and institutions, such as the Ford Foundation, the Toyota foundation, the World Bank and hundreds of others have well defined procedures through which project funding can be sought. An internet search is the place to start – put in search words like

“foundation” and “assistance” – and each website will lead you into the process required for that organisation.

Government bodies and aid agencies come in many forms. A good place to start is the foreign embassies in your country, which can provide possible avenues of enquiry. Your own government ministry of foreign affairs should be able to advise you on cultural agreements in force between your government and other governments, and an activity of your archive might fit neatly into such an existing agreement – or you may be able to influence the content of an agreement that is currently under negotiation.

Corporate sponsorship is increasingly being used by audiovisual archives as a way of supplementing budgets or funding ‘extra’ projects. It may be in cash or kind, or both. It will almost always come with conditions attached. That is, in return for providing you with certain resources, the sponsor will want something in return - which may be publicity, visible identification with your institution, or some other benefit. This is hardly surprising, because corporations are not charitable foundations – they are businesses who need to approach such arrangements as a business deal.

Sponsorships need to be negotiated with care so that the benefits and obligations of each party are specified, and the arrangements need to be of fixed duration – never open-ended. It is also important that the sponsor and the archive have an image and objectives that are compatible.

The most effective sponsorships are those that are built over many years – an ongoing relationship expressed in a sequence of projects in which each party gains an increasing understanding of the other, and therefore places a value on the relationship.

GLOSSARY

AV archiving is a young field, rapidly evolving, and still in the process of defining its terminology and identity. It has grown from many sources and disciplines, among them archival science, librarianship, and museology, as well as the technical and administrative realms of the film, broadcasting, audio/video and computer industries and cultures

A glossary of the most common terms will be necessary, with reference being made to other sources for much more extensive glossaries. Here are some sample definitions:

Audiovisual media are works comprising reproducible images and/or sounds embodied in a carrier, whose

- recording, transmission, perception and comprehension usually requires a technological device
- visual and/or sonic content has linear duration [that is, it is perceived over a period of time]
- purpose is the communication of that content, rather than use of the technology for other purposes

Audiovisual heritage includes, but is not limited to, the following:

- (a) Recorded sound, radio, film, television, video or other productions comprising moving images and/or recorded sounds, whether or not primarily intended for public release
- (b) Objects, materials, works and intangibles relating to the AV media, whether seen from a technical, industrial, cultural, historical or other viewpoint; this shall include material relating to the film, broadcasting and recording industries, such as literature, scripts, stills, posters, advertising materials, manuscripts, and artefacts such as technical equipment or costumes.
- (c) Concepts such as the perpetuation of obsolescent skills and environments associated with the reproduction and presentation of these media.

Audiovisual archive is an organisation or department of an organisation which is focussed on collecting, managing, preserving and providing access to a collection of AV media and the AV heritage.

Audiovisual archivist is a person occupied at a professional level in an AV archive, in the building, refining, control, management or preservation of its collection; or in the provision of access to it, or the serving of its clientele.

Appendix A

History of the AV media

Introduction

The recording and broadcasting of moving images and recorded sounds were technological achievements of the late nineteenth century. Though conceptually quite old, they were finally made possible by prior technological advances in other fields, such as the invention of photography and the electric light, the discovery of radio waves and the control of electricity. While the development of each can be traced separately, their interrelationship was understood almost from the beginning. Many developments fall to the credit of no single inventor, happening to some extent in parallel in different countries. Histories of the audiovisual media, therefore, can vary according to the viewpoint of the country concerned.

Sound recording

The invention of the telegraph made possible the electrical transmission, over a metal wire, of morse code signals. In the 1870s, the telephone took this a stage further, using a diaphragm to convert the sound waves of the human voice into electrical impulses, then back into sound waves in the earpiece of the listener. Working on his repeating telegraph in 1876, Thomas Edison (USA) tried the alternative of turning them into mechanical impulses which, via a stylus, left a modulated analog groove on a cylindrical recording medium rotating at fixed speed (at first, tin foil; later, wax). By reversing the process the sounds could be played back at will.

Initially a curiosity, this process was commercialised as the phonograph, rapidly becoming a worldwide phenomenon as means of mass-duplication of recordings were evolved. In 1888, Emile Berliner patented the gramophone, which used the same acoustic principles to play back an analog disc recording. By 1929 the disc had totally supplanted the cylinder. As well, electrical recording (using microphone and amplifier to give much improved sound quality) was replacing the original acoustic method which used a parabolic horn to focus sound waves while recording and amplify them during playback.

The analog disc evolved into many formats for radio, commercial and other uses, accommodating increasing playing time and improving sound quality, while lowering playing speed and miniaturising the groove. By the 1960s the 12 inch vinyl LP (long playing) disc, holding over an hour of playing time in stereo, dominated the market. In the 1980s it was displaced by the CD (compact disc) employing laser technology to play a digital signal, taking a further quantum leap in miniaturisation and playing time.

Magnetic sound recording on steel wire was first demonstrated when Valdemar Poulsen (Denmark) patented his telegraphone in 1898, and in the 1940s and 1950s wire recorders enjoyed some commercial success. The use of more flexible material (like film or paper tape) coated with metallic particles was launched in Germany by BASF/AEG in 1935, becoming the dominant recording technology by the 1950s. Passing at constant speed over a recording head which laid down sound information as magnetic patterns, the wire or tape could be played back by 'reading' the patterns and converting them back to audible sound. The patterns could be erased magnetically and the tape reused. Many formats evolved, the most successful and familiar being the 'Compact Cassette', the quarter-inch/6mm reel-to-reel format and the digital DAT format.

Film

Moving images rely on the phenomenon of 'persistence of vision' by which the mind can fuse discontinuous phases of action into seemingly continuous movement. Centuries of exploration of this principle led to optical devices like the zoetrope (a precursor of the modern animated cartoon), while the 'magic lantern' explored the principles of projection. In the 1830s, Fox-Talbot (Britain) and Daguerre (France) achieved photography. In the 1880s, George Eastman (USA) developed flexible film using cellulose nitrate as a base. The movie camera/projector brought all of these together, recording - and projecting - a sequence of images on flexible film kept in perfect register by perforations. Edison (USA) and the Lumiere brothers (France) are among those who devised and promoted the 'cinematograph' or 'biograph' commercially in the 1890s. 35mm was established (and remains today) as the dominant gauge.

The cinema rapidly became a worldwide industry, with Hollywood emerging as a dominating artistic and commercial influence. During the 'silent' era, colour cinematography developed, and the conventions and grammar of screen narration and documentary emerged. Smaller gauges - such as 28mm and 16mm - were introduced for non-commercial use and the 'home movie' was born.

Adding synchronised sound - on cylinder, disc or film - had been attempted from the 1890s onward, but became the norm with availability of practical systems from the late 1920s onward. The pace of change varied among countries. Around 1950, the manufacture of flammable cellulose nitrate film stock for 35mm gauge ceased, the industry completed its conversion to 'safety' (cellulose acetate) film, and a range of new colour film stocks accelerated the eclipse of the black-and-white film.

In the 1950s, in part to respond to the economic threat of television, the industry began to develop wide-screen processes with multi-channel sound tracks. Since then, enhancing the impact of image and sound has remained a preoccupation, leading to new formats like the 70mm Imax system and a variety of surround-sound processes.

From the 1940s on, 16mm established itself increasingly as a professional and, later, television gauge, and 9.5mm and 8mm gained favour as the 'home movie' medium. By the 1990s they had been largely displaced by the videocassette.

Radio

In 1888 Heinrich Hertz (Germany) demonstrated the sending of electrical energy through the air. In 1895 Guglielmo Marconi (Italy) introduced 'wireless telegraphy' using Hertzian waves to transmit morse code signals. The first 'radio' broadcast - linking the microphone to electromagnetic waves - was made in 1906 by Reginald Fessenden (USA). Public broadcasting began in the USA in 1920 and the phenomenon rapidly spread worldwide. The first receivers used earphones linked to 'crystal sets'; the development of the diode and triode valve and electronic circuitry made the loudspeaker set possible. Transistors later brought greater reliability and miniaturisation.

Radio developed manifold uses, of which public broadcasting for information and entertainment is the most obvious and widespread. In some countries there are now more radios than people. The link to the commercial recording industry was established early, and the two industries have fed each other. Until television usurped the role, radio in many countries (like the movies) supported a 'star' system of personalities in syndicated drama, comedy and variety programming. This system was later transferred to television and many of the early comedians adapted their radio shows and presentation styles to accommodate this new medium. Today radio programming is diverse, different stations pitching to specific age or interest groups in the community, and adjusted to where the listening audience is likely to be at particular times of the day. For example, 'drivetime' programs as people travel to and from work; 'talkback' radio for people at home; news and music as background to work and leisure activities during the day.

Television

When the telephone showed that the human *voice* could be transmitted, it was a short step to the concept of transmitting *pictures* over the wire and, later, by 'radio'. In 1884 Paul Nipkow (Germany) developed a spinning perforated disc to break down and then reconstruct a black and white image - rather like the 'dots' in a newspaper photograph. The following year, Henry Sutton (Australia) designed, but never built, the telephane, a theoretically workable television system based on the Nipkow device and the transmission of signals by telephone line. In 1897 Ferdinand Braun (Germany) developed the cathode ray tube which is a funnel-shaped glass tube in which a thermionic cathode (at the narrow end) generates a focussed stream of electrons which strikes and fluoresces a layer of phosphor on the inside of the 'broad' end. In 1906 Boris Rosing (Russia) combined the Nipkow and Braun technologies to produce crude television images.

In 1929, John Logie Baird (UK) opened the first television studio and service, using Nipkow discs. The mechanical system soon gave way to electronic scanning: Vladimir Zworykin (Russia) produced a practical camera in 1931. Fernseh established a public television service in Berlin in 1935, the BBC (UK) opened its high definition service in

1936, and RCA (USA) began broadcasting in 1939. Colour transmission commenced in the USA in the 1950s. Even today, recording/transmission standards are not universal: there are three main systems - NTSC, PAL, SECAM - which dominate different regions of the globe - and these are now being complemented by multiple standards for digital high definition systems.

From the beginning, film was a recording and source medium for television. Since the 1950s it has been progressively supplanted by videotape. Originally, broadcasts could only be received within the immediate transmission zone; the progressive use of coaxial cable, microwave and satellite links now make it technically possible to air a program or live coverage on hundreds of stations simultaneously around the world.

Cable television began in the USA in the 1950s and is now spreading worldwide. In a way, the medium has come full circle: cable television is, in concept, Henry Sutton's telephane.

Video

It was a logical step from the recording of sound on magnetic tape to the recording of television images. Ampex and RCA (USA) developed the first practical machines in the 1950s, standardising on a two-inch wide reel-to-reel tape which became the professional standard until supplanted by smaller reel-to-reel and cassette formats from the 1970s. In the 1960s, JVC, Sony and Toshiba (Japan) had introduced smaller formats for non-professional use. Today, professional formats continue to proliferate as new ones emerge every year: most will have short commercial lives.

Sony's $\frac{3}{4}$ inch U-matic, the first videocassette, appeared in 1969. In the mid-70s, Sony's smaller Beta format and JVC's VHS format made the home video cassette recorder (VCR) a reality. VHS ultimately prevailed as the consumer standard, while Beta evolved into a professional format. The home viewer could now record favourite programs off-air for re-viewing at will. This in turn gave rise to the pre-recorded video industry, allowing the consumer to own or rent movies cheaply, and providing film producers with a new market to exploit after releasing their product through cinemas and television. With the introduction of the camcorder in 1980, home video-making rapidly eclipsed the film home movie camera.

Philips (Netherlands) introduced the analog video laser disc as a playback-only consumer medium in 1972. Offering higher quality and more flexibility than the VHS cassette, it established a market in many parts of the world. In the 1990s, it was joined by emerging digital video CD formats.

The information superhighway

This imprecise but current term refers to the convergence of computer technology, telecommunication networks, and the transmission of digitised images and sounds by

cable, satellite or other 'narrowcasting' (as opposed to the now traditional meaning of 'broadcasting'). Elements of this rapidly evolving phenomenon of the information superhighway are:

- the personal computer (PC) linked by modem and phone to the Internet
- the CD ROM and DVD, combining interactively-retrievable text, still and moving images, and audio on a single carrier
- cable television
- cellular phones and portable pagers
- a host of interactive consumer services (for example shopping and banking) over the Internet.

The PC evolved in the 1970s to supplement the 'mainframe' computer which was already revolutionising commerce and industry. Len Kleinrock (USA) is credited with the first successful networking of computers in 1969, the humble beginning of the Internet, and the introduction of e-mail in 1972. The application of CD technology to computers in the 1980s produced the CD ROM, while cellular phones and portable PCs opened up new possibilities and markets.

By now the telephone pioneered by Alexander Graham Bell has become the vast telecommunication web of today's 'wired' world. The PC's ability to process and deliver textual, pictorial and audio information has brought entirely new synergies to the audiovisual media. The crucial step - perhaps unsuspected in 1969 - was linking the two. The capacity to cost-effectively deliver high resolution moving images in real time by Internet remains, for the moment, an unrealised goal.

Colour separation

At first, photography - including motion pictures - was monochrome (or 'black and white'). The advent of colour cinematography required the devising of a means to 'separate' an image into its primary colour components - red, blue and green (the additive primaries) or yellow, cyan and magenta (the subtractive primaries). An alternative, though less satisfactory, method was to use only two 'compromise' primaries - such as orange and blue, or green and red - which, depending on the subject, could still give good (although less true-to-life) results.

The earliest systems, from about 1908 onwards, employed the mechanical use of rotating colour filters in the photography and/or projection stage. Later systems, notably Technicolor, used an optical prism 'beam splitter' device to create separate monochrome records of the primary colour content, in the final stage combining these through a dye transfer process into an actual colour image. Variations on this principle used the different wavelength sensitivities of two types of monochrome film (orthochromatic and panchromatic), instead of a beam splitter, to create 'compromise' primary records.

Modern colour film stocks are a further adaptation of the separation principle: the three colours are superimposed - one on top of another - as separate light-sensitive dye layers when the film is manufactured. After the film has been shot, the latent image is revealed in the developing process.

The same principle of colour separation is the foundation of colour television, where the image is electronically reduced to its three colour components - the three images combining again on the television screen by exciting the red, blue or green phosphors on the inside surface of the cathode ray tube. Again, monochrome television preceded the development of successful colour systems. The computer monitor on which you are reading this topic is, of course, an adaptation of the same technology.

Major delivery contexts

Sound recordings were popularised by the spread of the phonograph and gramophone, and the development of retail sales outlets for commercially produced recordings. These became standard appliances and items of furniture in homes and schools where, before the days of electrical amplification, they were best suited.

By contrast, films had to be viewed in a public hall or other place where patrons could gather as a group. Film prints and projection apparatus were expensive (and to a degree dangerous, because both film and light source were highly flammable) and economically out of the reach of the ordinary person as a consumer product for the home (with the later, partial exception of film formats aimed at the 'home movie' market). Hence, the economic base of the film industry became the paying customer, viewing films in a purpose built cinema, which was owned by an operator, who rented prints from a 'distributor', who in turn had been contracted by the film producer to exploit the film. Each level in the system received a proportion of the patron's admission price. This structure, in essence, still operates today.

Radio joined the gramophone as a home appliance in the 1920s. Originally a large, sometimes ostentatious, item of furniture, it was progressively miniaturised and diversified. Portable versions could be taken anywhere; the car radio, once a luxury, gradually became the norm. Radio provided a wider outlet for sound recordings and attained great economic importance for the record industry. It also made possible new kinds of communication and entertainment, such as the newscast and the syndicated drama or comedy program.

Television - 'radio with pictures' - began a rapid spread from the 1950s onwards. Television programs evolved out of radio formats, and brought into the home films that previously were shown exclusively in cinemas. Like radio, 'commercial' and 'government' networks developed, the former dependent on advertising revenue for their survival. Since the 1970's, free-to-air broadcast television has been joined by a variety of subscription-based cable and satellite services, more highly specialised in their programming and directed at more focussed target audiences.

Popularisation of the audiocassette and videocassette recorder/player has not only provided a further market for pre-recorded material, but has given the ordinary consumer the actual (if not necessarily the legal) power to record off-air or to duplicate a recording at will. This form of technology has made viewing and listening a more flexible experience and has created an immense, albeit legally unauthorised, pool of AV recordings.

Computer based delivery - on floppy discs, on CD ROM and via the World Wide Web - is the newest outlet for images and sounds. It combines characteristics of all the preceding technologies: it is flexible, personalised, recordable (that is, downloadable), worldwide, and more or less instantaneous.

Appendix B

The audiovisual industries

Depending on the nature of their collection and activities, audiovisual archivists may have very close working relationships with the audiovisual industry, and indeed deem themselves and their organisations to be part of it. Like other industries, it is neither neat nor monolithic, nor particularly easy to define, but it may include the following categories:

- *Broadcasters and disseminators:* TV and radio stations and networks, and their subsets. Cable and satellite TV are recent additional sectors.
- *Production companies:* The makers of feature films, documentaries, television series.
- *Record and video companies:* The creators, manufacturers and marketeers of CDs, DVDs and videocassettes.
- *Distributors:* the 'middlemen' - companies which handle the marketing, sales and rental of cinema films and television series.
- *Exhibitors:* the cinemas.
- *Retailers:* record and video shops and rental outlets.
- *Manufacturers and engineers:* makers and suppliers of film, tape, CD blanks and consumables: makers and suppliers of the vast range of audio, film and video technical equipment.
- *Studios:* the production facilities and specialty houses, large and small.
- *Support infrastructure:* the huge range of industry support services, ranging from film processing laboratories to publicists, from the makers of cinema advertising slides to the makers of cinema seats.

The industry may also be described as comprising the following skills or areas of work:

- Creative (Production, talent, writers, directors etc.)
- Program (Strategic planning, image)
- Promotion (marketing, sales)
- Technical (engineering, operations)
- Management (Planning, policy)
- Support (administration, finance)

Libraries and archives may be regarded as part of the technical and/or support areas of the industry, though the entire range of skills above may be relevant to their operation. In addition, there are the producers and marketeers of CD-ROMS - which could include

several of the above - and the overlapping infrastructure of the computer and communications industries.