SOUND AND VISION

THE AGILE AV-ARCHIVE

Prestige and identity in times of technological change

Annemieke de Jong

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Annemieke de Jong (1955) worked at the Netherlands Institute for Sound and Vision (NISV) and its predecessors for almost 40 years. She held various positions, including that of film archivist, archive manager, project leader innovative projects, head of information policy and digital preservation officer. Internationally, De Jong was active in FIAT-IFTA, as chair of the Documentation Commission and as a member of the Media Management Commission. On a national level, she functioned as board member and project member of the Society of History, Sound and Vision, the national UNESCO Committee Memory of the World, the National Coalition for Digital Sustainability NCDD, the Dutch Heritage Network NDE and AVA_Net, the network organisation for Dutch AV-collection institutes. Annemieke de Jong was founder and editor-in-chief of the AVA_Net Knowledge base for audio-visual archiving and responsible for the certification of the Digital Archive of Sound and Vision as Trustworthy Digital Repository (TDR). De Jong studied Film and Television studies/New Media and Digital Culture at the University of Utrecht and Information Management at the Erasmus University in Rotterdam. Throughout the years she has written several publications on aspects and developments of professional audio-visual archiving.

In 2020 Annemieke de Jong was awarded the Lifetime Achievement Award by FIAT-IFTA, the world's leading association for professionals engaged in the preservation and exploitation of broadcast archives.

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PREFACE

In 1898, two years after the first public film screenings in London, Paris and New York, the Polish photographer and film cameraman Boleslav Matuszewski published a pamphlet with the title *Une nouvelle source de l'histoire*. In this pamphlet, Matuszewski advocated the establishment of film archives, so that film recordings, which he considered to have undeniable historical value, could be preserved for posterity. He pleaded for the creation of a national film archive, with a stature and authority comparable to that of the Bibliothèque nationale de France. Matuszewski also called for the organisation of an international network of archives, so that all the products of this 'marvel of technology', as he described the new phenomenon of film, would be secured worldwide.

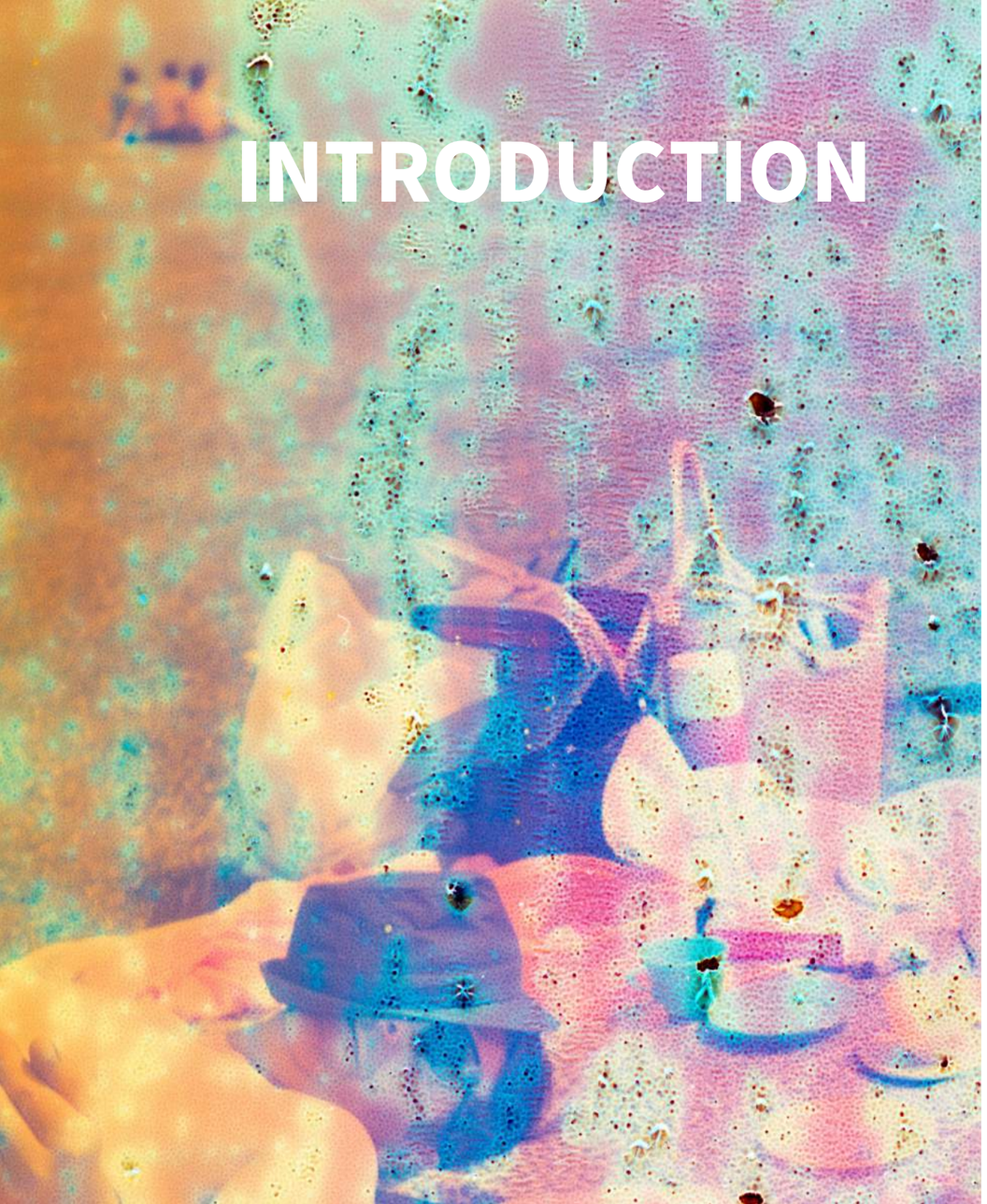
As Annemieke de Jong makes clear in this reflection paper, it would take more than eighty years after the release of this pamphlet for audio-visual collections of film, video and audio to be officially declared cultural world heritage by UNESCO. De Jong describes how the worldwide cooperation between audio-visual archives advocated by Matuszewski, would also take many decades to evolve.

Thus, the need for systematic, professional archiving of audio-visual materials because of their cultural and historical value, was acknowledged only forty years ago. During these forty years, far-reaching technological changes took place (keyword: digitisation). In her publication De Jong describes how audio-visual archives managed to find successful solutions to the challenges they faced because of these changes. In doing so, these archives eventually acquired the recognition and prestige that Matuszewski had already conferred on them in the nineteenth century.

While reading this publication, different thoughts came to mind. I would like to highlight two of them here. First of all, there is the relationship with what in the 1980s was called 'film and television studies' and is now called 'media studies' (or 'media and culture'). Thanks to the advent of video, academic study programmes were able to serve large numbers of students, initially by building their own collections, recording films and television programmes broadcast on the open network onto video cassettes at a large scale. Later, audio-visual archives opened up their collections to academia. This resulted, among other things, in streaming platforms offering archive material for consultation to students and scientific researchers. EUSCREEN even provided a platform at the European level, after audio-visual archives and academic partners had come together in a series of follow-up applications to the European Commission.

Secondly, I would like to mention the concept of the 'trustworthy digital repository' (TDR) that is described by Annemieke de Jong. Of course, the outside world expects audio-visual archives to be reliable and sustainable in the digital era. But even more important, are the high expectations when it comes to dealing with historical audio-visual media formats, whether it is a wax roll or a century old nitrate film or a more recent, obsolete video format. In fact, this puts archives in an increasingly difficult position: they are expected to have the know-how to deal in a responsible way with both the media of the past and those of the future. For this reason, audio-visual archives will have to continue to employ the necessary agility, or manoeuvrability, which is the characteristic referred to in the title of this publication.

Prof. Dr. Bert Hogenkamp, media historian



INTRODUCTION

The prestige audio-visual archives garner in society depends on the extent to which they reflect our cultural identity, hold testimonies of the times and are seen to represent an important form of human communication. Only four decades ago, in 1980, this prestige was 'formally' confirmed. In UNESCO's 'Recommendations for the Safeguarding and Preservation of Moving Images'[1], image and sound collections in broadcast archives, film institutes and other organizations were designated as worldwide, cultural heritage, in the documentary section. Countries and their governments were advised to more consciously and deliberately manage these materials, and ensure that everyone could consult and use them.

It seemed as if the domain of audio-visual archiving took off, jump started by the 1980 publication of these Recommendations[2]. In fact, this development had less to do with their new found, formal heritage status, than with a series of successive, vast technological changes that – each in their own way - had a profound impact on the form and content of these archives. These –historical- media transitions effectively resulted in the materialization of the audio-visual archive's new prestige.

Over the course of these transitions the essence of the audio-visual archive remained the same. In fact, this kind of archive was better able to maintain and renew itself during these turbulent times thanks to a number of unique inherent attributes. What then, is the 'essence' of this archive? With what is it tasked and how is it organised to fulfil these tasks? This document sets out to answer these questions. It sketches a picture of the audio-visual archive: its history, the profession and its most significant characteristics. It explains how the environment surrounding audio-visual archives has changed since 1980, and what effect this has had on the collections, the work processes and the staff. What were the struggles, what new strengths emerged? Finally it describes how these archives have gradually positioned themselves against the traditional *memory institutes*, such as 'classic' archives, libraries and museums.

Although the effects of the technological changes were eventually manifested in all types of audio-visual archives, whether small or large, nation-

1 http://portal.unesco.org/en/ev.php-URL_ID=13139&URL_DO=DO_TOPIC&URL_SECTION=201.html

2 The UNESCO Recommendations in fact remained unknown in many countries for a long time. Initially, they had little effect on the existing archives and no large numbers of new government-subsidised AV-archives were set up, as had been recommended.

al or regional - the most obvious and rapid manifestation occurred in archives whose origins lie in television, radio and film production. Consequently, it was this domain that affected the development of the broader AV-archiving world over time. For this reason, this article focuses primarily on the course of events within these archives.

1 THE PROFESSION

THE PROFESSION

1.1 Characterisation

The term 'audio-visual archive' traditionally refers to collections of screened films and broadcast television and radio productions and their associated documentation, sometimes supplemented by production material, such as editing masters and residual material[3]. These materials are collected, managed, preserved and made accessible by archives and by a variety of cultural and academic institutions. By far the largest amount of moving image and sound materials can be found in broadcast archives and in so-called 'hybrid' archives that fulfil both broadcast production and cultural heritage missions. National film institutes and (some) national archives and libraries also house extensive audio-visual collections.

Broadcast archives, historical archives and film institutes

In the context of broadcasting, the materials in the audio-visual archive represent a specific material manifestation of the business operations of one or more broadcasters. They form the end point of the act in which they were produced: the media production process. Television and radio programmes are archived so that they can be 'lent out' after broadcasting, in order to be reused in the creation of new productions. The fact that, at the time these collections were aggregated, the name 'archive' was self-evidently chosen, instead of, for example, 'library', probably has to do with the uniqueness of the preserved objects, and with the usually small number of copies of individual films and tapes that were kept. This uniqueness is more characteristic to documents in conventional archives than to books in libraries[4].

Audio-visual collections in historical archives, whether they operate at a national, regional or local level, reflect the cultural identity of a country or region. They are recorded for posterity and are accessible to the general public and for research and education. The collections of these archives also include selections of television and radio programmes produced by public, regional or local broadcasters. Documenting the history of cinematographic production and programming in a given country, is mainly the task of national film institutes. They also appraise the *artistic* qualities

3 Archives consisting of materials that were not originally intended for public viewing (i.e. commercial archives, collections of corporate films, amateur films and AV-materials produced for scientific research) do not fall into the scope of this article, unless stated otherwise.

4 Commercial moving image archives are usually still called 'libraries' (e.g. film libraries, video libraries, media libraries, etc.) In broadcast news and sports production, the term libraries is often used for the dynamic, varying collection of moving images that are integral part of live production processes.

of the films. Film archives originating in film production companies have processes and collections that are closely linked to a production process. That makes them similar to broadcast archives.

Arrangement
Unlike many other archives, the materials in broadcast archives are not strictly organised around concepts such as *respect des fonds* and the principle of provenance[5]. Their approach to arrangement and description is mainly in support of reuse at the item level in media production. The access possibilities to the collections for users outside the broadcast environment also differ. Public access is often limited by copyright restrictions.

As a rule, audio-visual archives are not archives in the formal-legal sense. The stored audio-visual 'archival documents' do not represent immediate, legal evidential value. Obviously, moving image and sound can function as formal, archival documents in the context of an archive act, but then it concerns information recorded by a government body, about the course of operations and tasks of that government. This is usually not the case with television programmes, radio broadcasts and film productions, i.e. the lion's share of the content of audio-visual archives.

1.2 Developing process

In the first three decades of the 20th century, AV-archives were not really considered a part of the conventional memory institute community. Initially, from the institutionalized world of archives, libraries and museums, the content of the new medium film was primarily associated with vulgar entertainment. National archives did not feel responsible for safeguarding this material. Even when film was increasingly employed for serious purposes, for example in documentaries and as political propaganda, it was not considered necessary to systematically register and store the productions[6]. For this reason, for a long time , AV-archiving, or what passed as such, only took place in all sorts of production and distribution companies, and was mainly organized around the reuse of the materials, for financial gain. As a result, an estimated half of all films produced before the 1930s have been lost.

Initially, the new medium film was primarily associated with vulgar entertainment

Film Archives
The first film archives were generally created by enthusiastic individuals concerned about the threat to AV-materials. This happened for instance, when silent movies were considered no longer commercially interesting to produce after the introduction of 'talking pictures'. Due to a lack of organization and money, not all of these film archives could survive, often with disastrous consequences for the materials that had been collected up until then.

A particular problem was the lack of knowledge and expertise. While traditional archives had been working on the basis of proven standards and methods for many decades, the new film archives had to start from scratch. This was mainly due to the fact that running an audio-visual archive, especially in a production environment, had little resemblance to managing documents in an archive or books in a library.

New working methods therefore, had to be developed for almost all archival processes: for the deposit of productions after screening, for appraisal, for the arrangement of the materials and its associated documentation, for physical storage and for the maintenance and preservation of the carriers. Driven especially by the potential reuse of content, these new archives also had to define specific requirements for cataloguing the images, that included the legal aspects of reproduction and copyright.

Broadcast archiving
The first decades of broadcast archiving, which started in the 1950s, resembled the difficult start of the film archives. Initially, programmes made for national television were not systematically collected by an archive either. After being broadcast, these materials usually remained in the hands of the producers and/or the broadcasters. These parties were not particularly interested in careful storage and preservation, let alone in providing access for consultation and reuse. Not only was content simply lost over time, some broadcast film was intentionally destroyed, due to copyright restrictions or a lack of storage space. Additionally, the recording of *live* television broadcasts was technically still in its infancy[7]. The emergence of video, in the late 1960s raised a new problem: the possibility of re-using recorded tapes. This attractive, money-saving measure was regularly applied and resulted in the loss of many recordings.

Content was not only simply lost over time, some broadcast film was intentionally destroyed

The serious management of films and the tapes in archive departments started in the mid-1970s. Gradually, broadcasters and other producers became aware of the production value of broadcast materials, especially when they were properly

5 Concepts from archival science that relate to respecting or restoring the original order of archives in relation to the original origin of the documents.

6 An early exception was the government-funded Netherlands Central Film Archive (founded in 1919), which had to be closed down again in 1933 due to a lack of funds.

7 Prior to the video era, the only way to register live television broadcasts was to record these programmes with a film camera placed in front of a television screen (this technology is called Telerecording or Kinescope).

stored and kept accessible after broadcast. The historical value of the materials was increasingly raised by historians and social scientists, who invariably argued for public access to the archived programmes. The growing appreciation of their national cultural significance however, as with cinematographic films, did not lead to public television and radio productions being automatically included in the collections of national archives in all countries. The knowledge and technical facilities required in the management of professional AV-carriers undoubtedly played a role here. Audio-visual archiving remained primarily the domain of broadcast production environments and film institutes.

Archive associations

Early on, these archives lacked the staff to deal with the new challenges in a professional way. Audio-visual archives, including the first film archives, mostly recruited their personnel from the related production environment. These employees - often with a technical background but without a formal archive theory background - were trained on the job, where local best practices were simply continued.

Archive associations that could have helped with training and standardization were not established until well into the 20th century. Although the FIAF (International Federation of Film Archives) was founded in 1938, this exclusive society continued to focus solely on cinema as an art form and not on television. The IASA (originally the 'International Association of Sound Archives') was created in 1969, but would not focus on moving images until later. In 1977, the International Association of Television Archives (FIAT-IFTA) was established, followed by sister organizations in the United States[8] and Southeast Asia[9]. From that period onwards more comprehensive international studies on the *métier* were launched[10]. This led to increased attention for professional discipline within existing AV-archives and enabled the standardization of working methods. It also provided staff greater insight into the heritage role and responsibilities of the archive.

1.3 Professionalization

The relatively slow professionalization of the audio-visual archiving trade was not only hampered by a lack of standard archiving conventions and training. It was also held back by the lack of awareness of the historical and scientific significance of these collections. This only came to an end well into the 20th century. For a long time, most audio-visual archives - whether they were film archives or broadcast archives - were mainly considered and run as production and working archives. Acquisition, selection, cataloguing and conservation were primarily aimed at enabling the reuse of items in production and not at the balanced composition and sustainable preservation of an AV-collection for itself.

Employees were trained on the job, where local best practices were simply continued

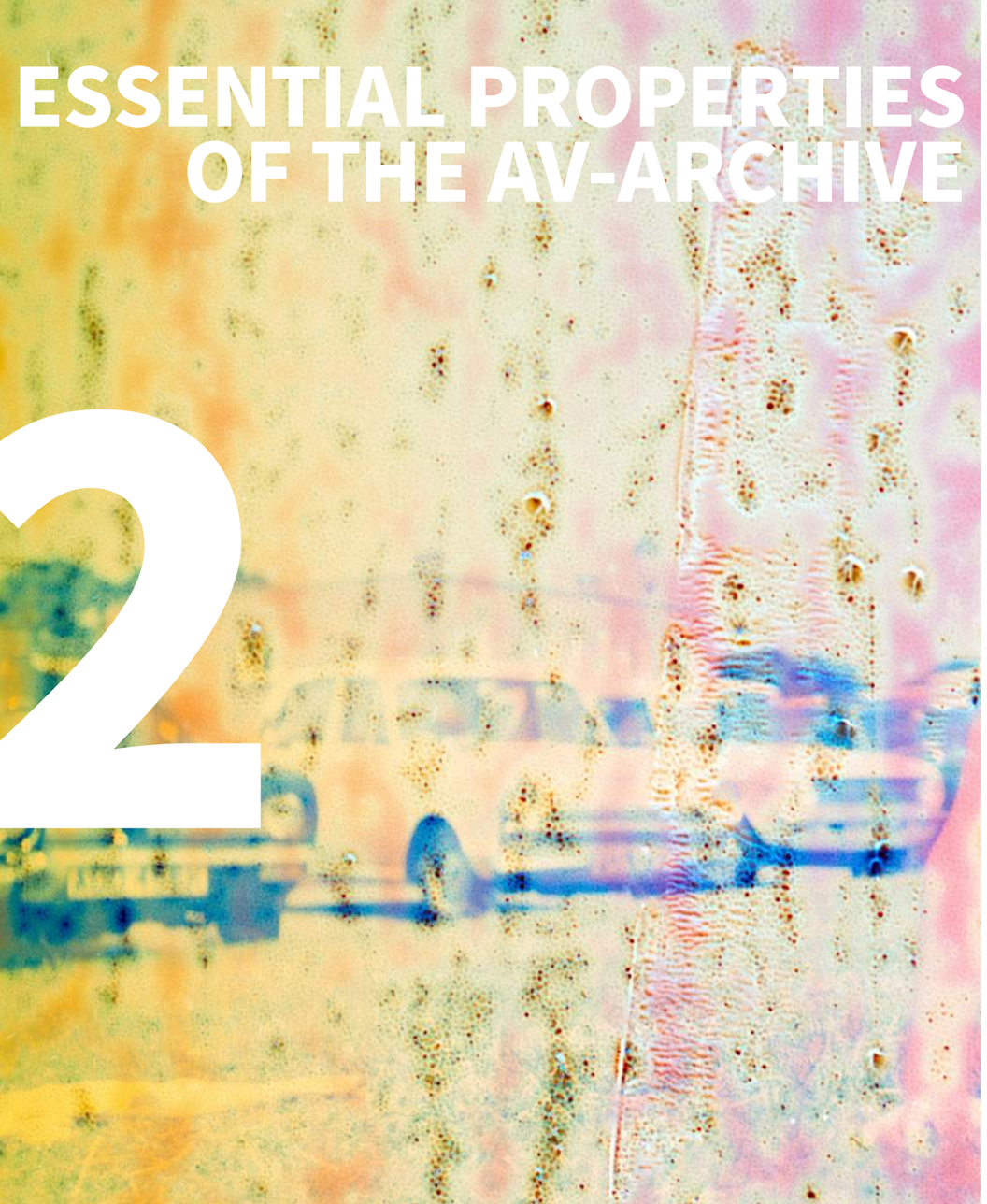
Dilemma

The audio-visual archiving profession, both within and outside of the archive, was of course much reflected upon and theorized from the the last quarter of the 20th century onwards. Ironically, from that time on, thinking once again often lagged behind practice. This was mainly due to continuous technological innovations, that seemed to follow one another ever more rapidly. The archive's problem was that - amidst the ever changing formats and equipment - it never had the opportunity to properly think over its new responsibilities as a heritage caretaker, nor could it patiently wait for definitive technical solutions. In everyday practice, there was simply never any time for this kind of planning and reflection. Action always had to be taken *today*, to ensure that material remained playable for current users. This dilemma would continue into the next century and is still present today.

8 The Association of Moving Image Archivists (AMIA, founded in 1991)

9 South East Asia Pacific Archive Association (SEAPAA, founded in 1996)

10 In the mid-1980s FIAT-IFTA and the BBC together published the "Panorama of Audiovisual Archives", the first real comprehensive studies of the field. A little later, under the auspices of UNESCO, the "Practical Reader for Audiovisual Archives" was released, with contributions from all the current experts. In the same period, AV-archiving became part of the so-called RAMP studies of UNESCO (Records and Archives Management Program). In the 1990s Ray Edmondson wrote his influential "AV-Archiving, Philosophy and Principles".



ESSENTIAL PROPERTIES OF THE AV-ARCHIVE

2

ESSENTIAL PROPERTIES OF THE AV-ARCHIVE

2.1 The technical orientation

Because of the nature of their collection materials, audio-visual archives must always react to technological innovation. Unlike documents and objects, the carrier of an audio-visual work can be separated from the intellectual content. To perceive this content, i.e. to make the image and sound visible and audible, playback equipment is needed. Given that this equipment is constantly being updated to reflect innovation, there will always come a moment when certain carriers will no longer be playable. Thus, it is vital to transfer the content in time, before it can no longer be technically reproduced. This is called the *carrier-content principle*. A related phenomenon is the so-called *loss principle*[11]. This principle implies as much as: if audio-visual archives do not actively preserve their materials (i.e. repeatedly transfer them to contemporary carriers and formats), the materials will not be preserve themselves (meaning that they will either become unplayable or simply perish).

Migration

The operation of these two principles leads to an undeniable relationship with technology. Audio-visual collections (if they are to be played back and used at all) exist in a highly technically oriented context. After the acquisition of films and tapes, an archive is permanently obligated to ensure content remains retrievable from carriers that are supported by contemporary technical equipment.

Audio-visual collections exist in a highly technically oriented context

In order to keep pace with innovations, these archives have in the past migrated large parts of their original collections of films and tapes to contemporary carrier standards. This has not occurred once, but repeatedly, and in ever faster migration cycles: nitrate film transferred to acetate and polyester film, 2-inch tapes to 1-inch and 1-inch tapes to professional video cassette formats, only to be converted into digital file formats, which in turn will have to be transformed again as these evolve.

11 The carrier-content principle and the loss principle were first formulated by Ray Edmondson in his work “AV-archiving, philosophy and principles” (1998).

The effect of the above principles is reinforced by the fact that most AV-archives are generally unable to determine themselves, what format of materials will enter their depot. If they were able to choose, surely a stable collection of sustainable, high-quality master formats could be built up, from which reuse could be facilitated on demand, with the help of derivatives in any desired format. As a result, there would be no, or less need for recurring large-scale migration. But - except in the case of AV-content they produce themselves - audio-visual archives are forced to manage the formats that are supplied to them by the producers. Given that production environments are primarily focused on publication and not on sustainable archiving, practical considerations, such as distribution and editing capability determine the choice of the format that eventually enters the archive.

The mindset of the AV-archivist

Therefore, for more than a hundred years, the main focus in the audio-visual archive domain has been to keep the physical collection technically accessible. Migration, conversion and all related processes form part of the daily, archival tasks. These activities require specialist knowledge. Archive staff should be able to think in technical, content-related and aesthetic terms and have an immediate understanding of the possible effects of any action carried out on collection materials. In order to supervise migration processes, they must be able to deal with all types of AV-equipment, media and formats, and be familiar with recording methods and logistics. They must be aware of all the physical and technical properties of film, video and audio materials, and know how to preserve these during migrations and other transformations.

For a long time, the technical mindset was one of the most important characteristics of the professional identity

Their strong focus on the care of the physical collection meant AV-archivists developed a technical mindset, one of the most important characteristics of their professional identity for a long time. Over time, it has been their knowledge and skill that made the outside world perceive audio-visual archives as centres of rare technical expertise, where unplayable vintage formats could be brought back to life.

2.2 Access and cataloguing

In addition to their pronounced technical orientation, audio-visual archives stand out by the way in which access is provided to their collections. Audio-visual material is made up of information conveyed by moving images and sound. It is difficult for this material to form its own index, as can be done with textual documents. This is because image and sound do not consist of unambiguous symbolic units, such as words in a text. Moreover, these materials are composed of sequential and temporal objects: they are *time-based*. All this makes a quick and synthetic understanding of the content a problem.

Representation

In order to be able to know what is on the film, the tape or in the file, an audio-visual production must be described in words. A catalogue description offers the user an idea of the structure and the 'storyline' of a programme without the need to actually watch or listen to the programme as a whole. The descriptions can be time-aligned with the actual moving image sequences by way of a timecoded shot list. Once a relevant element of the description has been selected, a user can play back the corresponding sequence on an editing table, a video recorder or a computer. Consequently, a catalogue description serves as a substitute or a representation of the audio-visual item itself and functions as its first point of entry.

Defining and describing the content of a programme, sequence and scene in order to represent it, is complicated. Different elements in the image need to be analysed and labelled. There is the distinction between the semantic layers: the information content (what is the item about?), the audio-visual content (what can be seen and heard?) and the stock shots (the identification of general shots that can be reused in a different context, for example in a new programme). There are rules for the inclusion or exclusion of content elements, such as the threshold of relevance ('seuil de pertinence') and the threshold of detail ('seuil de finesse'). A good description should ultimately be composed in such a way that the same scene or fragment can be queried from different angles: for reuse in new productions, for educational purposes, as a research source for academic users and for education and entertainment in case of the general public.

Conventions

As broadcasters and other producers increasingly regarded audio-visual material as an important source for production re-use, the need for a comprehensive catalogue description, with a strong focus on the inclusion of precisely timed stock shots and information on intellectual property and copyright, increased. From the 1980s onwards, with the growing professionalization of the field, it became relevant to start describing the information content, in addition to merely defining the audio-visual content. Once collections were made available to users outside of the traditional broadcast and media domain, AV-cataloguers additionally began to 'contextualise' the items. In the catalogue description, for example, extra information was

added about the creation of the production, about the reception and audience ratings, and about any prizes or nominations the programme may have been awarded.

In the cataloguing conventions for audio-visual materials, various 'trends' can be distinguished, roughly divided by sector, such as broadcast archives, government archives, research archives, business archives and commercial film libraries. Attempts by archive associations such as FIAT-IFTA and IASA to arrive at a general, common standard for the cataloguing of audio-visual materials, have certainly been made since 1980. However, due to the different needs of the various types of archives, these efforts usually got stuck at some point. At one end of the spectrum there was a desire for extremely detailed catalogue descriptions based on shot lists and 'stock shots', mainly expressed by broadcast archives and commercial libraries. The other side was represented by the archives, that preferred to mirror their cataloguing rules with the more classic conventions of the traditional archives. A good compromise was never reached.

In the 1990s, the 'handmade' catalogue description reached a high degree of refinement

Toolbox

When audio-visual archives were merely functioning as production archives, the cataloguing of moving images started out, so to speak, on the back of an envelope. Archive staff would scribble down a provisional, timecoded list of potentially reusable items and fragments in a programme. That's all it was. But after a few decades, many audio-visual archives had developed their own professional toolboxes for cataloguing moving images and sound, which they continuously improved and expanded, with a great deal of knowledge and dedication. With the help of these rules and instructions, the 'handmade' catalogue description reached a high degree of professionalism and refinement in the 1990s.

3 TECHNOLOGICAL TRANSITIONS

TECHNOLOGICAL TRANSITIONS

3.1 Impact

As explained earlier, the audio-visual archive by nature is familiar with technical innovation in the production environment. It knows exactly how to react. But the technological transitions that took place from 1975 onwards, had a much greater impact than the simple recurring changes to play-back equipment and audio-visual carriers. These historic changes affected the entire archival chain of acquisition, storage, access and availability and had a major influence on the way collection management and use was organized up till then. Although these transitions occurred more or less over a successive time-span, their effect on archive work, material and staff were interwoven in many complex ways.

3.2 Scaling up

The emergence of video, in combination with the multiplication of public television networks and other production channels, led to an explosive growth of moving image materials. From the mid-1970s onwards, many more items were taken in by the archive than before, when film was the only production format. The increase in production led to a greater demand for topical and historical fragments by programme makers and producers. This meant that material had to be processed and made available more quickly. It was the time when AV-collections were definitively discovered as a rich, living resource of moving image material that could be reused in all kinds of new programmes and products.

For the archive the increase in scale had several consequences. An unmistakable effect was the internal shifting of tasks and functions. While in a small, orderly environment, the 'audio-visual archivist' would have been able to perform every task him- or herself (i.e. taking care of acquisition, cataloguing, technical management and assisting clients in the selection of fragments)[12], the new situation required a division of labour. Formerly both a generalist and a specialist, the AV-archivist became either a cataloguer, a film renovator, a customer employee or a depot manager. The larger the archive, the more specialised functions

12 This of course is still the case in small audio-visual archives with few staff.

and departments became. Also, completely new types of employees slowly started to populate the AV-archive during this period, such as department managers, controllers and IT staff. On an organisational level, these types of appointments led to more uniformity, particularly in the case of broadcasting archives. For efficiency reasons for example, many radio- and television archives were merged, while, for better or for worse, processes, systems and working methods were synchronised.

AV collections were discovered as a rich, living resource of moving images that could be reused in all kinds of new products

3.3 Automation

In the mid-1980s, automation entered the archive. Working processes such as acquisition, registration and lending were the first affected. The data about these processes, previously registered in notebooks and card indexes, all gradually became digital. Soon after, the keyword lists and the paper catalogue descriptions that together provided access to the content of the films and tapes, followed. A period of complex and time-consuming conversions began, during which large amounts of disparate paper data had to be transferred to machine-readable structures, in order to be used in computer applications.

For a long time, the automated world existed in parallel to the analogue card catalogues and the file cabinets filled with typed out descriptions and registrations. These often continued to function as a unique source and/or as a paper backup of the digitized information. As in many professional working areas at the time, the development of computer systems was a matter of customization and pioneering, involving a lot of trial and error. The progression of commercial, off-the-shelve archive applications was still in its infancy and a comprehensive system, in which the entire archival data collection could be processed and consulted by all employees, was a complete technical utopia. In many audio-visual archives, this situation would lead to the infamous ‘island automation’ for years to come: an uncontrolled landscape of multiple, standalone databases and applications, containing both duplicate and unique data about the same processes and the same collection items.

3.4 The network environment

The rise of digital infrastructures within and around the audio-visual archive can be situated around the end of the 1980s. The ability to interconnect standalone archiving systems first of all led to more coherence in internal business operations. In theory, all data on the collection, be it catalogue information or administrative and technical data, could now be integrated in order to allow it to be exchanged, added to and used in a consistent way, throughout all archival process stages. This data integration would eventually come to include the programme data already created during production, in the systems of the production environment.

The network culture provided for direct connections to the outside world, for *connectivity*. Programme producers and other media professionals now had access to the archive catalogue themselves and could consult the descriptions of the items online. A little later, as the archive tentatively started to digitize analogue moving images, selections of historical and popular items could also be viewed and listened to from a distance. It became possible to distribute digital moving images to schools and universities, to be used as teaching materials on the spot. Not long afterwards, private individuals from the general public would also be able to view parts of the collection online, right from their own lazy chair. The services provided by the audio-visual archive were consequently broadened and deepened in all sorts of ways. Not only many *more* users, but also completely *new* categories of users had to be served now, each with its own set of requirements with regard to catalogue information (the ‘metadata’), search options and delivery formats.

3.5 Digital production

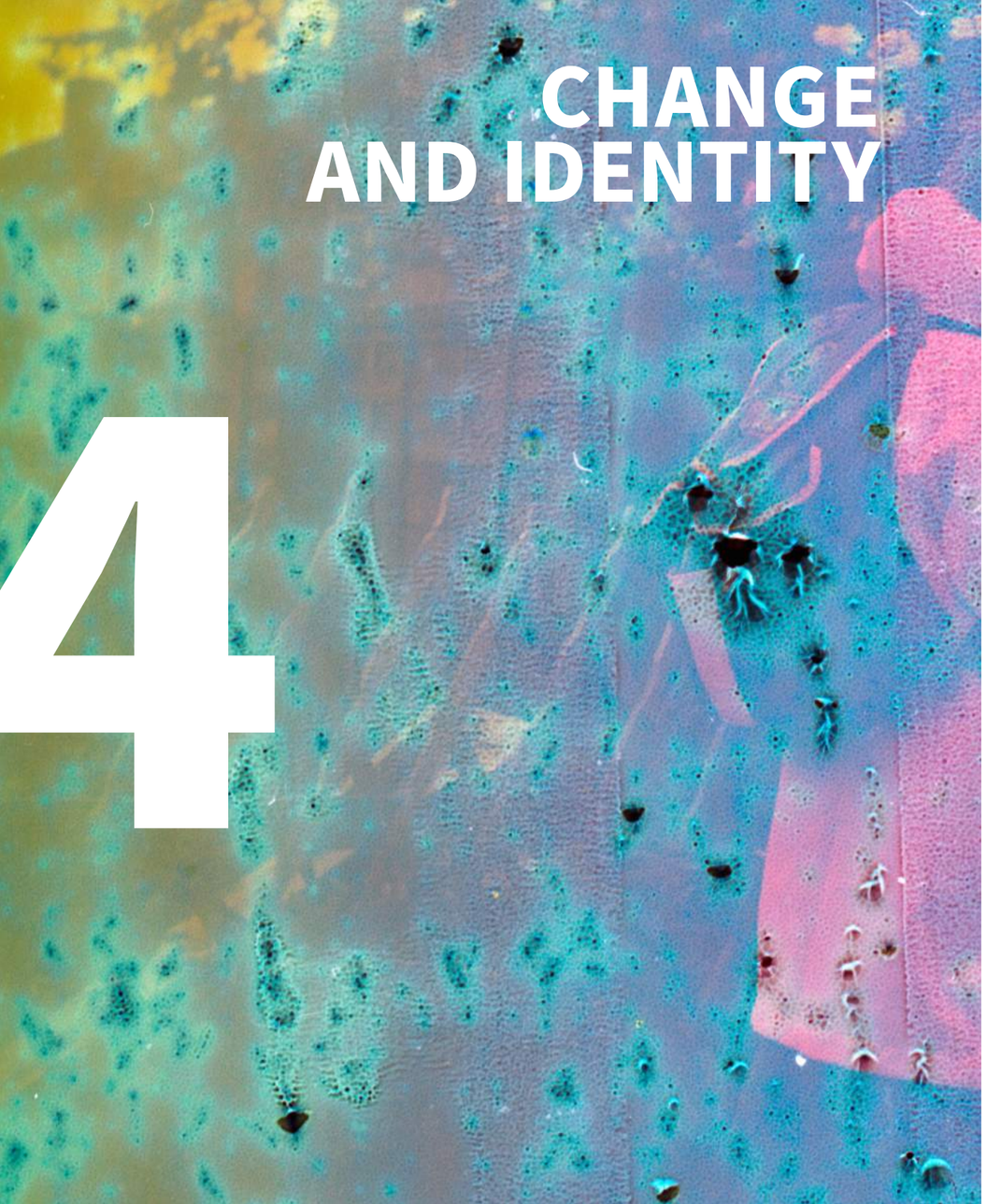
At the beginning of this century, more and more broadcasters and other producers switched to completely tapeless, file based production environments. From then on, most professional media content was produced digitally. Individual systems for planning and post-production, for technical processing, for distribution and for archiving were linked together. Consequently, all phases in the creation of media productions were included in a digital workflow and covered the entire production chain: from concept to broadcast or screening to archiving.

The AV-Archive now functioned at the heart of the ongoing digital media production process

At each stage, employees in the production chain would create and process digital materials consisting of video, audio, texts, metadata, graphic objects, stills or a combination thereof. As a result, the productions-in-progress were not anymore part of a linear process but circulated across the

network to be simultaneously added to, stored, distributed and consulted.

After the introduction of digital production, the audio-visual archive was no longer supplied with analogue films and tapes. Only digital born materials came in from the professional production environment. These digital files, whether they consisted of production materials or complete productions, were ingested directly into the archive systems, along with the associated metadata that had been created during production, by programme makers, production staff and technicians. In the chain of digital creation, processing and archiving, the audio-visual archive was no longer a self-evident, final destination of completed broadcast or screened productions. It now functioned at the heart of the ongoing digital process: source, link, start and a finish, all in one. The archive's technical infrastructure, supporting ingest, storage and delivery of the materials, no longer stood alone. It became an integral part of the wider media production.



4 CHANGE AND IDENTITY

CHANGE
AND IDENTITY

4.1 The archival unity

The digitisation of the production process is generally regarded as the fifth revolution of the audio-visual media, after the invention of silent film in 1895, the emergence of sound film in 1928, the introduction of television in the period after World War II and the onset of video in the 1970s. Along with the increase in scale, the automation of work processes and the emergence of the network culture, this revolution disrupted the internal unity of the audio-visual archiving process, as it had been shaped up to that point.

Combined, these transitions led to new conceptual and practical problems, that were initially difficult to grasp. It became clear that the AV-archive- in the midst of the ongoing technological developments- would have to work towards a new interpretation of the management, the handling and the accessibility of the collection. The relationship with the outside world would have to be reshaped. In the process, a series of difficult barriers had to be overcome, at the level of the internal organisation, the corporate culture and the archive's self-image.

4.2 Overview and control

To begin with, the differentiation in tasks, necessitated by the explosive growth in volume and the increasing reuse of the collection, made the archiving process more diffuse. The fragmented application landscape contributed to this. Keeping an overview and staying in control of the collection content, the logistics and the technology became a challenge. It got harder for archive staff to stay informed about the creation, the modification and the discarding of collection item data, which were continuously entered into disparate archive systems. Consequently, no common awareness developed among colleagues anymore, on the possible impact their individual actions might have on collection components.

There arose, for example, gaps in internal communication, about what was acquired and selected, and how that related to what users considered interesting. As cataloguers did not work with clients themselves anymore, they were unable to determine whether their descriptions satisfied the needs of the users. Film renovators functioned autonomously, without having much contact with

customer service, who then consequently, were not adequately informed about the state of materials at the time of lending. This fragmentation in archival custody had already begun when carriers were still analogue and taken in by the archive in ever-increasing numbers. The risk of damage from unintentional modifications, incorrect information and redundant storage became even greater when parts of the collection itself were successively digitized.

4.3 Collection management and ICT

Traditional audio-visual archivists combined their technical expertise with substantive and aesthetic collection knowledge. They had a broad understanding of the usage of the materials and knew how to handle them. From the turn of the century onwards, the technology of audio-visual formats had become more and more ICT. In the new, digital world, the close relationship with physical carriers changed. A certain distance arose from the material manifestations of the archive: whilst a film or a video cassette could be touched and handled physically, a digital file was ephemeral and elusive. With increasing automation and digitisation, the management of the archive's physical collection suddenly no longer seemed to be something that staff such as collection specialists and curators, had to be concerned with. ICT belonged to a different world, a world that these employees initially deliberately kept at arm's length.

Technological reductionism
There was also a perception at the time that perhaps too much interference with 'digital management' by audio-visual archivists was not necessary either. In general, there was a great deal of confidence in the new digital technology, particularly among senior management. The general idea was that AV-materials, once digital, needed little care. After they had been ingested, the files, after all, would be stored in a secure digital black box where they would be automatically kept in good and sustainable order.

In the new, digital world the close relationship with the physical carriers changed

It was also commonly believed that digital technology would itself eventually solve any problems it created, such as the rapid ageing of formats and software. This form of *technological reductionism*, for some AV-archives, increasingly resulted in a kind of belief that digital collection management was purely an ICT concern, to be directed and carried out by ICT technical staff, who in fact generally lacked the knowledge about the contents and the aesthetics of the collection.

Quality assurance
The coherence of archival processes was affected in yet another way. In the analogue era, the audio-visual archive had been more or less able to create the conditions for sustainable preservation itself, by taking good care of the stored physical materials, even long after the materials had been taken in. This quality assurance became more difficult to perform on digital files, especially in the initial periods of digital production.

In order to be added to the archive's repository, the files had to be checked and validated. Prior to storage, the most important physical, technical and content-related characteristics of each individual file, had to be identified and registered. If this was not done properly, the guarantees of reliability and reproducibility would vanish: files could get lost forever, be copied in an uncontrolled way or gradually become corrupt or unplayable. But unlike before, these conditions in the digital era had to be met *upfront in the process*, i.e. before and during ingest. Consequently, for a large part, the responsibility for the quality assurance and the associated sustainability of the materials was transferred from the archive to the producer or depositor.

4.4 Everyone is an AV-archivist

The quality of the catalogue description was also influenced by whether or not the audio-visual archive formed part of a digital production environment. In this case, 'archiving' now started at product creation. The programme maker in the production environment would lay the fundament of the catalogue description, which later - in the course of the creative process - would be enriched by others.

The archive, or rather *archiving*, was no longer considered a speciality

'Everyone is an archivist', was a frequently heard phrase in the early days of digital production. The archive, or rather *archiving*, was no longer considered a speciality. It became a decentralized activity, an integral part of the digital workflow, carried out by all participants in the production chain. From an exclusive ending point and a central dispensing counter for authenticated AV-materials, the audio-visual archive in this period seemed to transform into a distributed, dynamic user repository.

Search engines
The refined *métier* of manually cataloguing audio-visual productions had already come under pressure since the end of the 1990s. From this time on the creation and maintenance of complex keyword structures, such as taxonomies and thesauri, was increasingly critically examined. Once again, but this time in the areas of access and cataloguing, there were high expectations concerning evolving digital technology. Computer systems, after all, were now creating more and more useful metadata themselves, such as the date, size and version of a document. Other relevant metadata automatically flowed in from the production environment or were directly delivered digitally by depositors.

To better enable catalogue searching by end users, advanced search engines, that quickly and effectively performed full text searches on large 'text banks' with unstructured catalogue descriptions, were increasingly relied upon. Also, speech recognition, metadata extraction and image analysis software research evolved during this period. The aim was to develop tools for automatically generated 'descriptions' of moving images and sound. Evidently, the results of this technology would be *quick and dirty* for a long time to come, but the prospect of large amounts of materials made searchable quickly and cheaply, was highly anticipated.

Self image
All these developments concerned the (semi-) automatic production of information about the collections, i.e. the creation of formal and content-related metadata, a task that until then had belonged to the exclusive domain of the professional audio-visual cataloguer. Now that so much metadata could be generated automatically, manual cataloguing suddenly no longer seemed to be the best and only option for making the collection accessible. The profession of cataloguer was regarded with increasing scepticism. Weren't the extensive, carefully crafted catalogue descriptions far too labour-intensive? And did users really need this much detailed information? It was the start of a period in which the job titles of AV-cataloguers were changing constantly and differed in each audio-visual archive: information specialist, media manager, AV-documentalists, metadata manager, information broker, etcetera. This phenomenon reflected the shifts in the profession and the quest for a new identity for the audio-visual archive and its employees.

Responsibility
Other developments began to affect the self-image of these archives. As the heritage status of AV-materials grew from the 1980s and 1990s onwards, national focus was increasingly directed to the smaller, dispersed film- video- and sound collections that had been built up over time by municipal archives, regional government centres, research archives and corporate archives. Gradually, as national leaders in the field, the larger public broadcasting and film institutes were expected to enter into collaborative knowledge exchange with these collectors, whether formally or informally.

Many AV-archives became aware of the commitment they needed to make to the broader audio-visual collection landscape

At the same time, outside of the professional media production world, implementing 'audio-visual' technology as a documentation approach, was increasingly considered practical, and in some cases more so than text. This development was already apparent with the advent of video, but the introduction of digital production means strongly encouraged it. From the turn of the century onwards, more and more government archives added digital images and sound to their archive collections, initially in modest numbers, as a by-product, later also as formal archival documents in a legal sense. Again in this domain, existing, national audio-visual archives were often called upon to provide expert advice on the cataloguing, storage and preservation of AV.

All these changes increasingly made AV-archives, be they broadcast archives or film institutes, realise the greater commitment they needed to make to the development of this broader audio-visual-collection landscape. This envisioned responsibility went far beyond the management and preservation of their own collection.

5 THE ARCHIVE RISES

THE ARCHIVE RISES

5.1 New strengths

Ultimately, for many audio-visual archives, automation, digitisation and connectivity led to the exploitation of new intellectual and technological powers. After long periods of trial and error, the archive databases and applications were optimised to become the foundation of a modern, digital archival business operation. Transparent workflows created overview and control and consequently restored the unity of the archival chain. Multiple, fast connections between collections and users expanded archive services in an unprecedented way. In the network culture, moving images could be distributed on a larger scale than ever before. Rigid, hierarchical classification systems made way for flexible indexing, which improved system and catalogue search facilities. Semantic networks created unexpected and creative links between separate archive collections, anywhere in the world. The digital files themselves were preserved in sustainable ways, while media professionals, the general public, academics and users from the education domain were offered the materials in any format that suited them.

5.2 Innovation

For data scientists and for researchers in digital humanities, audio-visual archives gradually became an el dorado. The presence of ever-increasing amounts of varied historical and topical data in a digital format (i.e. moving images, sound and the associated metadata) turned the archive into a popular research environment.

By now, large and small audio-visual archives have for many years been participating in national and international innovation projects in the field of image and speech recognition, linked data, semantic networks, automatic classification, data analytics and data visualisation. The results of all these R&D activities are prominently represented in the programmes of professional conferences and other knowledge platforms, where the main focus currently is on advanced solutions for searching, presenting and preserving digital audio-visual materials.

In many AV-archives, the innovative applications have created new skills and competences, which

have been converted into staff jobs such as data analysts, workflow experts, customer researchers and information specialists. Certain traditional areas of professional expertise remain important here: knowledge on access, reuse and user demands, an overview of the contents of the collection, knowledge of the catalogue and the keywords and insight into the historical development of the catalogue conventions.

5.3 Media management

After the introduction of the network environment and the tapeless, file based production, the audio-visual archive as a physical entity, with a demarcated collection and professional cataloguers seemingly disappeared into the background. But archiving from the immediate production source, by programme makers and technical staff, proved to be more difficult than expected. Not everyone in the production environment was able to function as an 'archivist' just like that. Indeed, proper cataloguing of AV-materials turned out to be a real profession, that required certain skills and specialist knowledge. The ingest of automatically generated production metadata into the archive catalogue did not immediately give satisfactory results either. Archive professionals were evidently still needed, to correct, structure and complete the data, or to help others with this task. In some media production environments the trend emerged to deploy archive cataloguers as 'media managers' and have them support programme editors and production staff to guarantee metadata quality from the start.

Innovation created new skills and competences which were converted into new staff jobs

As more and more material became available online, many audio-visual archives consciously began to build up knowledge about the requirements of new user groups outside the traditional broadcast and media circles, such as the general public, academics and users from the educational domain. A second form of 'media management' focussed on curating the digital collection items by presenting and arranging them in new ways. In order to make the online offer more topical and attractive, selections of the digital collection would be thematised and contextualised. The standard catalogue description was supplemented with additional information and came to include links to sources outside the vicinity of the archive, such as Wikipedia, related websites and social media. Other aspects of reuse were also professionalised. Digital rights management, for example, came to flourish with new subjects such as privacy protection, automated license management and extensive rules for the protection of copyright in the event of reuse and online publication.

5.4 Archival ICT

A large part of the analogue techniques -the traditional specialty of the audio-visual archivist- has by now been replaced by digital technology. Audio-visual archives have realised over time that considering digital collection management to be mainly an ICT job, carried certain risks. Not only did many digital operations, such as the encoding of analogue tapes and the scanning of films, require professional knowledge about physical carriers. It also became clear that any decisions on quality, formats, archiving systems, search modules and sustainability could not be left solely to ICT personnel.

The awareness of the risks attached to digital archiving made the technological reductionism disappear

For this reason, a part of the 'original' archive staff gradually became more involved in the ICT domain. Equipped with their archival insight and content-related approach, they built up dedicated knowledge and expertise in managing digital AV-collections. ICT departments in many AV-archives, in turn, became more sensitive to the archive and heritage environment in which they operated. These advancements led to new, ICT-related specialisations in managing, preserving and online delivery of digital AV-files. With this synthesis of knowledge and expertise, the old technical mindset of audio-visual archives returned in a renewed form.

The increased awareness of the various risks attached to the management of digital materials made the technological reductionism disappear. It became clear that, also in the digital era, one could not simply wait for a definitive technical solution to each format progression. Just as with analogue carriers, the archive would have to operate proactively, to ensure that all digital files remained playable as soon as their format was in danger of becoming obsolete.

5.5 Trustworthy audio-visual memory

In the past, migrating obsolete carriers to new, current formats had been a regular activity, which reoccurred every ten to fifteen years. The proper registration of these format changes however, was often lacking, especially in production archives. The meticulous recording of the processing stages

materials underwent, including the possible effect of the actions on their form and content (the so-called *audit trail*) never had much priority here. For this reason, legacy archive systems generally do not contain a lot of information on the lifecycle of many of the original films, video and audio tapes nor of the files that were produced in the initial 'digital' periods. If this category of data was being kept at all, the frequent conversion of the data to modern systems brought with it consequences. With each conversion, parts of the information could have been excluded, intentionally or unintentionally. Especially at risk was data considered of no direct interest for material reuse. Given this background, many audio-visual archives could therefore not guarantee the authenticity and integrity[13] of their materials in the classic archival sense.

Audio-visual collections can no longer be considered the property of the producer, they belong to society as a whole

Once AV-collections were considered as cultural-historical heritage, they became a part of the collective memory. Thus, these materials can no longer be solely considered the property of the producer. They belong to society as a whole. By virtue of having been assigned cultural-historical value instead of (only) production value implies that all significant characteristics of digital AV-media must be demonstrably preserved, through time and changing technology. In their role as care taker of cultural heritage, AV-archives must be able to function as a controlled, reliable and sustainable environment, as a trustworthy digital repository (TDR).

Currently, in daily practice, this means that most of these archives try to work according to fixed procedures, based on common digital preservation standards. File provenance and its life cycle are meticulously documented. Validations and checks should guarantee the preservation of the authenticity and integrity of the materials throughout the entire process, from ingest through storage and access. In this way, accountability can be demonstrated to depositors and producers, to user groups and to society as a whole.

13 Simply put, these terms imply that an object is what it purports to be, that it's provenance is known and that can be demonstrated that it has not been altered without authorisation.

6 SIMILAR AND UNIQUE

SIMILAR AND UNIQUE

6.1 Critical issues

The beneficial effects of digital technology on the audio-visual archive business cannot be dissociated from a number of problems. Digitisation and connectivity generate many new archival concerns. There are the well-known critical issues: the heterogeneity of the files and the formats, the scale of their production and the validation and appraisal of digital items. There is the growing security problem of the digital data and the technical infrastructure. The huge dependence on technology, which itself is constantly changing, dominates.

Life cycle

The collections of many AV-archives must be available in current production formats at all times. For this reason, these archives have become familiar with the continual process of transferring obsolete carriers to modern formats. But the life cycle of digital objects is extremely short. File formats have to be migrated to prevailing standards much more often than film and video. The hardware and software, needed to store and play back the files, must also be upgraded time and again. The standard amortisation of databases and servers in which the archival processes take place, is about five years at most. And it is not yet clear how long storage media such as hard disks and data tapes will last.

As explained earlier, in most cases, the format supplied to audio-visual archives is determined by producers and depositors. Given that professional media producers are forever striving to achieve the highest digital quality in their production formats: will the archives in the future be able to adequately take in and distribute these ever heavier, complex formats? And what are the access and usability consequences for all the content retained in lower standard AV-formats during all these past years?

Quantities

The volume of audio-visual digital content archives are faced with is huge. Selecting and prioritizing are a daily struggle. *What part* of the analogue legacy materials to digitize, *how much* of the daily digital programmes to ingest and *which* of the new associated media types - the websites, the

web video and the social media - to add to the collection? In the background exists a compelling technology, allowing every byte to be stored, interlinked, automatically indexed and presented all over the world. Anything goes. The question then is whether anything is also 'archive'. Many audio-visual archives will have to learn to make rational trade-offs between quality (standards) and quantity (volumes) in order to sustainably preserve their collections and keep them accessible.

A compelling technology allows for every byte to be automatically stored, linked and presented

The use of artificial intelligence will become indispensable in managing these large digital volumes and keeping them accessible. Machine learning, applied in making moving images and sound automatically searchable, is already prominent. Even the more traditional archival processes, such as selection and appraisal, preservation planning and collection management will be increasingly carried out on the basis of algorithms and business intelligence. But certain concerns exist about the large-scale deployment of these automated and automatic techniques, particularly in terms of long-term control. How to involve the varying, context-specific insights and judgement of the human 'audio-visual archivist' in this technology? How to prevent the self-learning systems from running off with the archive's principle values?

6.2 Trouble shared

There is also good news. For the first time in their existence, audio-visual archives no longer stand alone in their concerns. Indeed, all types of archives and collecting institutes that hold digital materials are struggling with the same technical and conceptual issues, including national and legal archives, research organisations, libraries and museums. And - regardless of provenance, original form, carrier and distribution channel - their content now has many characteristics in common. This also goes for the processes in which the materials are collected, stored and preserved. Many 'digital' issues and concerns can nowadays be tackled in unison by many types of digital archives, using the same models and standards[14].

Obsolescence, custody and access

What used to apply to audio-visual materials only, is now true for *all* documents in digital form: their representation requires (computer) equipment, which can become obsolete, as can the formats themselves. The *carrier-content principle*, previously exclusively associated with AV-collections, can therefore now be applied to digital collections in *all* archives, regardless of the nature of their collection, be it books, text documents or other printed materials. All institutions that hold a digital archive, will also have to deal with the typical *loss principle*, which enforces proactive migration or emulation[15].

Many AV-archives are making serious efforts to conscientiously record the chain of custody of the materials

On the other hand, in some ways, AV-archives in the digital age are becoming more similar to traditional archives. Given their cultural-historical heritage status, classic archival concepts such as authenticity, integrity, completeness and reliability have come to play a much more important role in the audio-visual archiving process. AV-archives are presently making serious efforts to conscientiously record data on the origin, form and content, life cycle and the relations of the archived object to other objects, in order to be able to demonstrate the digital material's chain of custody[16].

And while audio-visual archives can learn something new about authenticity and integrity from the 'classic' archives, the latter category may be inspired by the cataloguing and access practices of AV-archives. After all, whereas providing access in all its aspects has forever been the audio-visual archive's key business, traditional archives have been primarily focussed on archiving integral collections, according to their historical and their legal evidential value. But in these 'classic' archival realms too, highlighting the cultural significance of individual collection items, and providing (online) service to the general public and other users, has gained prominence. Presently, the traditional archives themselves even speak of a shift in their archival paradigm: from storage to access.

6.3 Sustainable specialities

Quite apart from the nature and the content of the collections, there are of course many areas in which the digital AV-archive continues to distinguish itself from other digital archives. The intrinsic characteristics of AV-media for example, result in specific technical preservation and access requirements.

Time based media

AV-media are time based. This property requires a special storage technology that detects the audio-visual signal on the tape or in the file. AV-files are also very large, which can cause complications and risks during storage and distribution processes. For this reason, many audio-visual archives

14 Best-known example is the OAIS standard, a reference frame work for the development of an information system for the long-term storage of digital data. PREMIS, the standard for preservation metadata, is also used by all types of digital archives.

15 Emulation is a process by which an obsolete digital files can be reproduced using a device or software that functions as if they were another device or program.

16 Chain of custody is the chronological documentation that records the stages of the archival process an object has passed.

prefer to compress the files. The time-bound nature of AV also influences the metadata associated with the constituent parts of the materials. Mechanisms must be in place to (automatically and manually) link these metadata to the exact position of the actual image and or sound content of the file. Crucial to the management of digital AV-files is therefore the tightly defined relationship between the essence (the digital image and sound) and the technical, administrative, descriptive and copyright metadata that document the characteristics of the material at shot and sequence level.

In addition, it is generally not just single files, but *packages* of files that are processed in the digital AV-domain. Besides the video file, there is the associated audio file as well as additional and supporting files, such as subtitles, logos, production and copyright metadata. These files form an integral part of an AV-production and must stay permanently linked. Managing this particular combination of AV file characteristics, requires specialist technical expertise, in addition to extensive information-management techniques.

Partial retrieval

Furthermore, distributing items from a digital audio-visual archive is hardly comparable to exchanging a text file or a digital photo. The crucial feature here is the support of *partial retrieval*. This feature implies that the 'AV-package' of moving images, audio, metadata and any related files is not played back as a whole at each delivery action. Instead, the content of the distribution package may vary, depending on the users' search query. From a technical point of view, providing access to a digital AV-archive may consequently imply being able to simultaneously service large, differentiated user groups, each with specific demands as to image quality, granularity, browsing and navigation facilities, metadata and interoperability. This places high demands on the design and the control of the archive's technical infrastructure, especially when it is connected to a dynamic digital production environment.

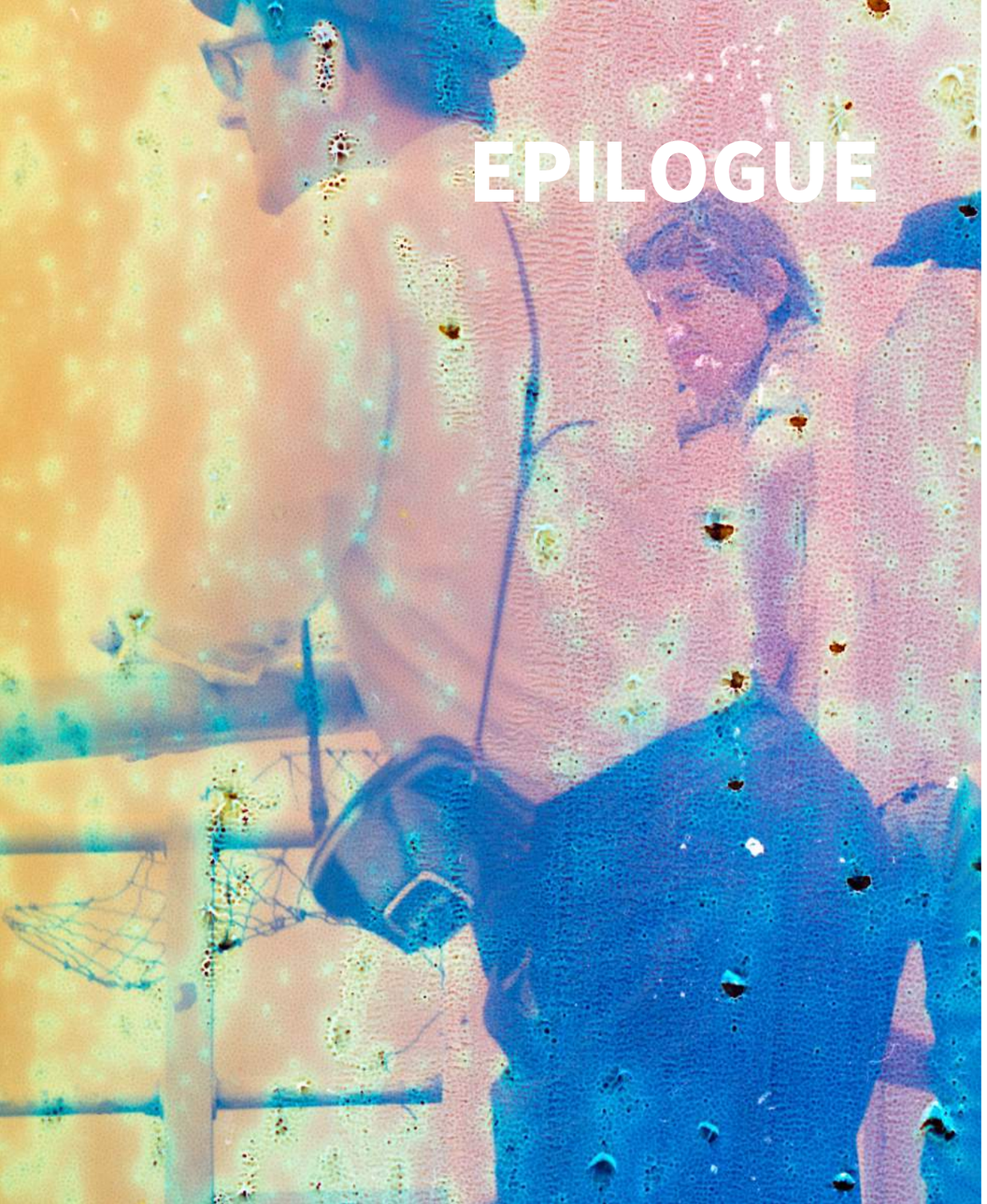
AV Competence Centre

The audio-visual archive remains unique as a centre of specific technical expertise. These archives preserve the knowledge about all the analogue 'generations' of film, audio and video carriers that were produced during a large part of the 20th century. The staff are aware of the ways in which these format types – each in their own way - have to be kept and managed in storage depots. They are familiar with the appropriate analogue devices that are needed to play back, restore and prepare carrier content for consultation and digitisation. Much of this vintage professional and consumer equipment - if still present in the archives at all - needs permanent maintenance in order to keep the devices running for as long as possible. This care can (still) be provided in the audio-visual archive. Because of this specific knowledge, audio-visual archives are most qualified when transferring analogue AV-carriers to a digital format, whether it concerns the scanning of film, or the encoding of video and audio tapes. With the increasing scarcity of analogue equipment, this type of expertise will become more and more exclusive. Consequently, the preservation of analogue AV-carriers by means of digitisation, will gradually become more expensive rather than cheaper, as is the case with printed matter and other text materials.

With the increasing scarcity of analogue AV-equipment, expertise in this area will become more and more exclusive

What is not digital

The fact is, large parts of legacy AV-collections are not digital and in all likelihood never will be. Users, be it media professionals, educational customers or the general public, will at one point no longer be aware of the existence of these materials. After all, from their point of view, what is not online, what is not immediately available, does not exist or is of no interest. As a result, moving images and sound that are not available in a digital format will slowly vanish. For much of these materials, it will only be the 'audio-visual archivist' that ever realizes it exists. He or she knows his or her way around the old card-catalogues and the dusty store rooms filled with carriers that were never digitized, and will be able to make these materials visible and audible again. This particular quality of the audio-visual archive will take on increasing importance in unlocking the many AV-items that were never allowed to attain a digital status and therefore, consciously or accidentally, became virtually non-existent.



EPILOGUE

Success factors

It is clear that the increase in scale, the automation processes and the digital transitions that have taken place over the past four decades, have drastically changed the prestige of the audio-visual archive, culturally and materially. Throughout all of the technological changes, many of these archives have paved their way to a strong, discernible position in the current digital network culture. Two of their most distinctive 'significant properties' worked as success factors.

a. Focus on access

From the beginning, the focus on providing access to their collections was part of these archives' DNA. Over many decades they have consistently built up comprehensive knowledge and skills in the areas of technology, cataloguing and indexing, and legal aspects of access and usage. Given this background, it was perhaps not so radical to extend access to their collections to users other than the limited group of producers, media professionals and broadcasters. Consequently, digital moving images – while respecting the legal and copyright considerations – could be made available relatively quickly to the general public, educational users and the creative industry. The traditional focus of the audio-visual archive has therefore been of vital importance in the practical fulfilment of its broader, cultural role and subsequently for the strengthening of its societal legitimacy. To be able to reach out to the outside world, audio-visual archives, so to speak, did not have to change their entire paradigm. Their mindset and many of their processes and conventions were already in place.

b. Technical capabilities

The focus on access and usage has ensured a high degree of technical adaptability. Time and again these archives have had to adjust to new technical requirements in their environment, in order to keep their collections ready for use. By tradition, they feel at ease in technical surroundings that are constantly evolving. They have the flexibility and expertise needed to deal with complex technical changes and embed these in their business processes. These characteristics are of great importance in the current unstable times, as formats,

software and hardware constantly have to be upgraded or replaced.

Many AV-archives have benefited from being an integral part of a professional media production environment. In that case, in their role as service provider, they had to continuously meet high technical requirements in their ingest, storage and delivery facilities. Each time the production environment underwent a smaller or larger technical renewal, the archive was expected to perform its functions properly from the start. This was obviously already the case in the analogue era, but it became even more evident after the introduction of digital production. Consequently, the state-of-the-art technology found in professional media production was always reflected in the technical capabilities of the audio-visual archive. This contributed substantially to their image as an AV-competence centre.

Documentary world heritage

In 1980, with the UNESCO Recommendations, audio-visual collections were 'officially' recognized as cultural, documentary heritage. From then on, audio-visual archives were no longer merely seen as production archives. Often, they would be better equipped for their heritage task: financially, organisationally and, in most cases, also legally. Many audio-visual archives eventually evolved into a conscientious heritage institute, a versatile AV-service provider and an authoritative competence centre, all in one. From this position they participated in large digitisation programmes nationwide, designed to save valuable audio-visual materials from decay and inaccessibility. They joined international coalitions and lobbying platforms that structurally draw attention to the significance and vulnerability of moving images and sound.

This international lobby work also focuses on the countries and regions where (a lot) of moving image and sound is produced, but where the means to preserve the materials and make them accessible are often lacking. Even if a legal basis for archiving exists, the law cannot always be complied with, due to a lack of technical infrastructure, lack of training and lack of money. International AV-archives associations play an important role here by providing practical support, exchanging knowledge and initiating local seminars and training projects. There is also cooperation between some AV-archives from Western countries and national archives that have formed in their former colonies.

In the Ibero-American regions, work is underway to set up a regional network[17] to gain an overview of existing audio-visual collections in different countries, and to develop common, online training programmes. The APEX program[18] promotes international collaboration and dialogue on media preservation. In some African countries, national archives and universities organise projects that creatively seek ways to set up inventory and digitisation programmes, with the aid of crowdsourcing and private funding. And since 2005, we celebrate UNESCO's 'Day for Audiovisual Heritage'[19], an annual event that creates yet another way to draw recurring attention for endangered AV collections. Together, these initiatives ensure that all parts of this valuable, worldwide heritage remain in sight and will not fall prey to the *loss principle*.

Hilversum, March 2020
Annemieke de Jong

17 Iberoberoamericana de Preservación Digital de Archivos Sonoros y Audiovisuales (RIPDASA) http://www.unamglobal.unam.mx/?p=58034
18 Audio-visual Preservation Exchange Program https://tisch.nyu.edu/cinema-studies/miap/research-outreach/apex
19 https://www.un.org/en/events/audiovisualday/