Audiovisual and Multimedia Content in the Curriculum for Librarianship Studies at the University of León in Spain

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Introduction

Within the framework of its programmes in Librarianship and Information Studies, the University of León provides a course whose syllabus is aimed at giving an awareness of audiovisual and multimedia documents. The second-year course in 'Analysis of Document Content' deals with the treatment of documentary messages with a view to retrieval.

In addition to this undergraduate subject, the University offers a postgraduate course with the title 'Photographic Archives, Centres for Graphic Documentation and Image Banks. Representation and Retrieval of Photographs'. It has also run extramural courses, such as Images in the World of Information, given in March 2001.

Discussion here will concentrate on the content of the course in question and the strategies used to teach it. The appearance of optical storage media has led to the birth of multimedia books and other works. In them, text, images, video, voices and animations are integrated interactively so that the end user has complete freedom of movement. Information professionals have to acquire the skill of representing the messages carried by the various codes that go to make up multimedia documents with a view to retrieving them.

The Course on Analysis of Document Content

The subject 'Analysis of Document Content' (ADC) has as its aim to teach students the rudiments of abstracting and the basics of indexing. It consists of three modules. The first module covers theoretical aspects of ADC. The second module concentrates on ADC for documents in print form, starting with a block given over to abstracting and following on with one on indexing. The third module looks at ADC for items that are in sound, visual, audiovisual or multimedia forms, with special attention paid to the peculiarities affecting their treatment.

The order in which the content of the course is presented is not arbitrary. It begins with an outline of the theoretical parameters of ADC, its conception and relationship to other content analyses. This concept is approached from the angle of its links to information and documents, and the interleaving of this discipline with information retrieval and indexing languages is studied.

The second area covered is ADC of printed materials. This is included for several reasons:

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1. Students are more familiar with the verbal code of textual documents and how to handle it. All of them have at some time written an abstract or gone through a text underlining its main ideas.
2. The verbal code permits sentences for the abstract or terms for indexing to be derived directly from the text. It is only necessary to identify the basic concepts: a formulation of them is already available in the document. The indexing carried out in this subject is an indexing of concepts, free, with only minimal standardization.
3. The intention is for students to grasp the relationship between indexing and retrieval, and the need to measure the quality of the latter so as to correct the former. This is more easily achieved by using print documents as examples, since the students have been users of libraries and done searches for items of this sort.

Once students have mastered the fundamental concepts of abstracting and indexing, they are given instruction in the methods used to represent and retrieve audio, visual, audiovisual and multimedia documents. This makes up the third module of the programme.

The spoken discourse of sound documents is transcribable into written language with no greater difficulty than that arising from its diachronic nature (developing over time) and the necessity for reproduction equipment.

As for still pictures, which sometimes have a direct impact, the course lays stress on the main peculiarities affecting their handling. These are their iconic coding, their synchronicity (no development over time) and their polysemic nature (multiple meanings). Prior thought on these points is indispensable before coming to grips with analysis of audiovisual and multimedia items.

Items which are audiovisual, mixed, and multimedia documents, are studied last, after consideration of features affecting handling of materials with a single coding for information transmission.

Means of Transmitting Content and Their Effects on ADC

Systematic organization of documents as a function of the coding they use is crucial in information science, since the various codes and differing layouts of messages in different media affect the treatment and retrieval of their contents. The codings are the following (Rodríguez Bravo, 2002: 112):

- In respect of writing, it is a question of textual or written documents, which hitherto have been principally on paper, corresponding to books or printed material. Nowadays, however, textual material also has a considerable place in digital documents.
- In the case of sound, there are audio items, covering principally records, cassettes and audio CDs.
- With regard to still or moving pictures or images, there are photographs, films, slides, and some other formats.
- Finally, there are mixed items, which until recently were exclusively audiovisual. However, a digital document permits integration of sound, visual and textual items. While at the moment text is predominant, there is an increasing tendency towards full multimedia.

Until around a decade ago, the principal division was between documents on paper and the remainder, forms which were outcomes largely of 20th century technical advances. However, at the present day the most significant split is between analogue and digital media, between atoms and bits, as Codina (2000) puts it.

What characterizes analogue media is that they represent information through a relationship of resemblance or analogy, maintaining some similarity between the information and its coding, even if this may be remote. By contrast, in digital media, which utilize a series of bits to represent information, any similarity between information and its representation is eliminated. Whether the information is a text or a photograph or a video, it is just a set of ones and zeros for the computer; in other words all these would be represented in the same way.

In analogue media, however, each format or coding and each information medium requires its own form of coding. In fact, no analogue medium is equally appropriate for all formats of information at the same time. In contrast to this, digital media can hold any format of information and any combination of formats.

In the light of this new reality, the following classification has been proposed (Rodríguez Bravo, 2002: 115):

1. Directly decodifiable analogue documents: these would be pictorial and printed materials that do not need any intermediary apparatus for access to their message. The medium on which they are held is paper or some similar material, tangible and very stable.
2. Analogue documents not directly decodifiable by the senses, but requiring some form of reproduction equipment: slides, video recordings, records, and so forth. The medium on which they are recorded is tangible and reasonably stable.
3. Digital documents on a tangible medium that is not directly accessible but needs a computer and some form of reader. These include CD-ROMs and DVDs. The stability of the medium on which they are recorded is also reasonable.
4. Digital documents on a medium which is intangible, or virtual documents, which cannot be directly decoded, needing equipment, in this case a computer and a network connection. These are documents circulating on the net and are very unstable, subject to constant change.

It is to be noted that these four types also constitute stages in the evolution of documents. From this it is possible to see the technological evolution that documents have undergone and are undergoing, since it does not appear likely that digital documents will replace earlier types in the short term. Curiously, it seems that documents in printed or book form will be those with the greatest life expectancy; not having been displaced by audiovisual formats, they have still not been superseded by digital. Their better ergonomics work in their favour, together with the fact that text is the principal vehicle for thought.

Some Reflections on Teaching Documentary Treatment of Pictures

Before approaching ADC for audiovisual and multimedia items, it makes sense to go deeper into the treatment of the codings that go to make them up, which are language, whether spoken or written, and images. As already mentioned, pictures have particular characteristics that affect the way they are handled (Rodríguez Bravo, 2000).

The first is their iconic coding, which makes it necessary to carry out a translation to verbal coding at the moment when they are to be submitted to analysis, with the difficulties this involves, since it forces translation of images of concrete realities into concepts. This usually implies that there will be a loss of meaning. Analysis of images is always only partial, because the change from one medium of expression to the other imposes the making of a selection from among the inexhaustible possibilities offered by the visual document.

The analysis faces the difficulty of having to recognize and name what can be seen in the picture. This task is all the more complicated because it is a question of recognizing, not so much the object in itself, but rather the image of it, and because this naming has to be done without it being feasible to have recourse to the document itself and take from it the terms needed to represent the concepts selected. Indexers must work exclusively on the basis of their cultural knowledge and landmarks, of the semantic competences listed by Vilches (1987): iconographic, narrative, aesthetic, encyclopaedic, and linguistic and communicative. An attempt is made by the course to reinforce these skills in the students.

The second fundamental peculiarity that has to be stressed is the polysemous nature of images, with their multiple meanings. A picture serves for elucidation in many more contexts than a written document can, by virtue of the distinction between what the image denotes and what it connotes. Pictures are very flexible.

Indexing is not to be limited to what objectively exists in the image, to its concrete concepts, but should also extract from it abstract concepts that represent the impressions or sensations that the picture transmits. However, to go overboard on these subjective aspects, which vary as a function of the universe of reference of each individual user, illustrator, graphic professional or television producer, may give the image a set of meanings not envisaged either by the photographer and/or cameraman or by the indexer. It is preferable not to go too far away from the context of the picture as given by the photograph caption, the report of which it forms part, the text or the soundtrack, and not to assign abstract terms to it ad lib.

Besides this, attention must be paid to the risks that might arise from re-use of pictures in which people appear in contexts differing from the original. This might lead to lawsuits for infringement of a person's right to their own image or for libel, apart from damaging the prestige of the publication or other medium because of its use

of inaccurate information. Of course, only anonymous people are likely to be involved when there is an out-of-context use, but anonymity is clearly a relative quality. Well-known people can only be denoted by their names and thanks to the specific field that makes them public and representative figures.

The third important characteristic of images is their synthetic nature, an outcome of their capturing a part of reality as seen through the lens of a camera. Still pictures present all their information at once. They are synchronic documents, summaries, and the human brain and eye can grasp their significance in an instant.

This circumstance, together with the multiple meanings and hence fresh uses of which the picture is capable, permit the drawing up of more exhaustive indexing in comparison with printed documents, with due regard for the dangers mentioned above. This is because the noise brought in by very detailed indexing, increasing the level of recall, does not imply negative consequences, but rather quite the opposite, for two reasons:

1. Images are picked out much more rapidly than printed materials, which are diachronic and verbally coded.
2. The polysemous character of pictures means that the subjective views of an analyst do not have to be identical to those of a potential user.

Hence, it is most appropriate to offer users a wide initial choice and to allow them to make the final selection. According to Joanna Smit (1987), it has been demonstrated that 30 is a suitable number for the person requesting an image to be able to make the correct choice. This is true when the search can be made directly from photographs or from their digital reproductions. If the user must choose from analytic records by reading the descriptions and characterizations drawn up by an information professional, selection will be costlier, less certain and more time-consuming.

All the same, exhaustiveness must depend, as in the indexing of any document, on the quantity of information to be picked out in the visual document and on the background and the requirements of users of the information centre. Pictures which are more unusual, rarer or more beautiful are those that will require greater detail in description.

In fourth and final place among the characteristics, it would seem necessary to stress the importance of formal aspects of the content, technique and composition of the image, to facilitate re-use. This is for two reasons. The first is that the way in which a picture is taken influences its interpretation, since the supposed objectivity of visual items is a myth. Hence there are characteristics that are fundamental in aiding discrimination among the motifs represented: types of planes, structure of the representation, lighting and atmospheric characteristics, axis of take, and others. The second is that the formatting of books and newspapers limits choice and hence aspects such as the format, technical quality or whether the picture is in colour or black-and-white are crucial. Demands for information from users and their criteria for accepting the results of a search are not based solely on the concepts represented in a document; how they are represented is equally or even more decisive when it comes to making a choice.

The use of still pictures in magazines, books and newspapers is studied and photographs are abstracted and indexed. Practice is given in retrieval from image banks such as Corbis, Getty Images, Comstock, Age Fotostock, and so forth. Students are introduced to the characteristics of Systems of Automated Image Retrieval (SARI), both conceptual (concept-based indexing) and visual (content-based indexing).

ADC of Audiovisual Documents

Thirdly, students are introduced to the analysis of audiovisual documents, mixing sound and pictures, which are diachronic and not directly decodifiable by the senses, depending on technological developments.

Items with a single fixed image construct their messages on a purely spatial canvas, stable over time, and using only an iconic coding and the visual channel. The first liberation from static images was achieved by means of the superposition of a sequence of still frames so as to obtain moving pictures. This is the essential ingredient of audiovisual documents, among which cinema and television products bulk largest (Pinto, García and Agustín, 2002: 192).

In comparison with textual discourse and still picture types of document, media using moving pictures and sound pose problems for the

process of analysis as a result of the changing and transitory character of the messages they send. Indexers are obliged to undertake several viewings or showings, with sequences defined and located by the use of a stopwatch. However, audiovisual documents represent a synthesis or linkage between word and picture, since these give each other mutual support in resolving the deficiencies of each subsystem. Just as photographs need the text of their captions to focus the meaning of the image, here it is sound that carries out the needed contextualizing function for the picture. Moreover, the sequential delivery of images also permits a context to be given to the messages. Audiovisual documents turn out to be more precise semantically than purely visual items.

Since audiovisual information is made up of elements belonging to the worlds of both images and sound, study of them must be approached from two angles:

1. By considering each of the levels separately.
2. By considering the two levels together, observing any changes that they undergo as a result of the combining of codings.

Analysis of the contents of audiovisual documents is complex, owing to the juxtaposition of codes, but also because of the diversity of the items involved: cinema, video and television genres. In addition, the purpose for which these documents are being treated has to be kept in mind:

- Whole-item retrieval of videocassettes, DVDs, and so forth, in libraries and other information stores.
- Retrieval broken up into micro-units of information (sequences, scenes, shots, and the like) of news, reports, advertising spots, and so on, in various means of communication.

This fact implies that the unit constituting a document may be any thematic piece of information (film, video, programme, report, sequence or shot).

The stages for ADC for audiovisual materials, according to Pinto, García and Agustín (2002: 265), would be the following:

1. Viewing. This implies a knowledge of the specific features of audiovisual language.
2. Determining the structure of the contents and describing the document. This presupposes an awareness of the various audiovisual genres and their respective practices.
3. External documentation, interpretation and document contextualization. Documentary support is sought to aid interpretation of the item under consideration.
4. Bringing together all the previous steps.
5. Representing the document contents. Drawing up the various types of documentation product.

So as to manage resources adequately it is necessary to establish the level of analysis needed for each type of document. The level of analysis will be related to the later uses that the material may undergo. The contents of documents which are highly likely to be re-used, will demand more detailed description and indexing so as to facilitate their retrieval by any concept. This would be the case with news and documentary programmes, and of the original prints from which a film was edited (Conesa, 2000).

When a news bulletin or programme containing several reports is being analysed, each of the news items or reports will need to be treated individually, as would be done for the articles in a periodical.

The conceptual or semantic analysis of a report may be similar to analysis of a text document. If the documentary analysis of the same piece of news as published in a newspaper and as reported in a television newscast is compared, some elements in the description of contents will be found to be very similar. However, the audiovisual document is also analysed at a second level, with description and indexing of the concrete images it contains, which may or may not be directly related to the overall theme of the item (Conesa, 2000).

An average description must include at least an outline of the most prominent sequences, indicating the names of the people involved, identifying locations and describing the actions taking place in shots.

The difficulty of analysing audiovisual documents lies in having to differentiate between the theme of the document or report, normally generic and given by the spoken discourse, from the information brought to illustrate it by the various shots, always showing concrete places, objects, people and actions.

Just as is the case for still photographs, shots are subject to great divergences in interpretation, but it is best to describe them fundamentally by using the concrete features that exist referentially in them. Compositional and technical aspects are equally crucial in indicating the type of sequence as useful or useless for a given user. The description of the pictures must include: the type of shot, camera movements and other formal aspects. To aid in locating images it is necessary to indicate at what point in the document (time code) the shot or sequence is to be found.

Practice in this sort of document handling is provided by using various pre-recorded television broadcasts: a newscast, a documentary and an entertainment programme. The formats of the Spanish State Broadcasting Service, Televisión española (TVE), for analysing programmes aid in gathering all the vital data. A cinema film is also indexed and abstracted. The principal sound and image banks and indexing engines on the World Wide Web, such as Footage.net, are also accessed.

ADC of Digital/Multimedia Documents

To end the course, the special features of digital documents are considered, chief among which is their multimedia character, bringing together text, image and sound.

In recent years there has been a striking phenomenon, the migration from textual and audiovisual systems to the new digital environments. Indeed, the new category, 'multimedia' documents, arises from the combination of text and audiovisual documents made possible by computerized environments. Digital documents combine the two channels, sound and vision, and the three available codes (textual, iconic and musical). Interactive CD-ROMs represent the digital version of the traditional book, but the development of the Internet or Web has given rise to an alliance between multimedia applications and online networks whose sphere of influence goes beyond any previously available form of document.

The separation between contents and storage medium means that digital documents are not just compound (different codings) and distributed (stored in several files), but also dynamic (easily modified). It is from these characteristics that the new possibilities that they offer derive, and these are many. Their strong points are their huge storage capacity, their virtual nature and their accessibility at distance, along with their ability to be constantly updated. Their weaknesses are the difficulty of keeping their messages (their durability) and the greater difficulty there is in ensuring they are complete and authentic. The facility with which messages can change storage medium and the ease with which they can be manipulated lie at the origin of both their advantages and their disadvantages.

Linda Schamber (1996) characterizes digital documents in the following way: they are easily manipulated, can be linked both internally and externally, they are rapidly transformable, easily accessible, instantly transportable and able to be replicated infinitely. From these characteristics it may be deduced that the first difference between digital and analogue documents lies in the fact that in them there is a dissociation between medium and content. The specific features listed by Schamber refer to content, because the storage medium has lost its relevance. In fact, messages contained can be copied with ease to any other medium, which makes them transformable or manipulable and also transportable.

In a digital document the spatial and temporal limitations intrinsic to all other documents have disappeared. Now the worry is mostly about how they can be located in the boundless digital jungle where contents are broken up into a mosaic of elements whose sense is freely reconstructed by the user thanks to hypertext. It is in this context that an interest arises in autodescription and the concept of metadata, a notion that includes information about the contents and context of digital documents.

The greatest deficiency of the Internet at the moment is the lack of a universal system for labelling, representing and structuring information so as to allow more adequate automatic searching and processing of any web document. Students are given an awareness of the various models for metadata, with special attention paid to the Dublin Core Metadata.

Solely for the purposes of content analysis, it is useful to group digital documents into three categories (Pinto, García and Agustín, 2002: 314–315):

1. digital documents
2. computer programs
3. multimedia documents

In the first group can be included those documents which involve no more than a simple translation to digital formats, storage and reproduction media of messages which are textual, sound or visual items, and which thus require a content analysis appropriate to their coding, noting as a novelty that they now have a digital format and storage medium.

Computer programs are tools for processing information, requiring to be identified and located, but lacking informational messages and so not needing content analysis.

As for multimedia documents, they are items in which the normal interactive tools allow the combination of various communicative elements: text, sound recordings, digital video, and so forth. In interactive multimedia documents the medium modifies the message, which creates a new means of communication and a distinctive class of documents for the purposes of content analysis.

Content analysis for multimedia documents must consider, on the one hand, each of the levels or communicative codes separately, keeping in mind their peculiarities, and on the other, the three levels jointly, observing the transformations they undergo as a result of the combination of codes. Given the unstable nature of these documents, the products of content analysis are to be integrated among metadata, which will aid in locating items.

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Web Addresses for Image Banks

Corbis Traditional (http://www.corbis.com)
Gettyimages (http://www.gettyimages.com)
Comstock (http://www.comstock.com)
Agefotostock (http://www.agefotostock.com)
Footage (http://www.footage.net)