A study into the effect of digitisation projects on the management and stability of historic photograph collections

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Abstract. The results of an ongoing interview study with custodians of historic photograph collections are reported. In particular the success or otherwise of recent digitisation projects is addressed, as well as the extent to which these projects have affected the long term management of the collections. We examine the effects of digitisation on the primary sources, their digitised surrogates and the relationship between the two in terms of selection, authenticity and representation. In most cases we have observed that the emphasis placed by the funding bodies on 'accessibility' of tangible numbers of resources is detrimental to these three other issues. However, we report in detail on one case study of a local history library where its digitisation work is embedded in core library activity and seen as successful and positive. We conclude by suggesting that their deliberate eschewing of short term project funding is a determining factor in their success.

Introduction

New technology has allowed for the unlocking of 'memory collections' for public access and has also enabled users to integrate information from many different sources instantaneously. In the UK the past decade has seen a growth in the availability of lottery funding for local and family history collections within the public library and museum world. Often referred to as 'heritage' or 'memory collections', [6, 13] they have caught the public imagination and custodians have seen a dramatic growth in demand for access to such collections.

In the past such resources were the province of professional specialist researchers, genealogists, and experienced family and local historians. Today, however, anyone with access to a computer can research their own interests and, with the materials now available online, build a unique picture of their own histories and sense of social

place. Such online 'memory collections' have been argued to have a strong potential to improve citizens' sense of self and their society's historical context.

However, there are implications to giving the public access to such a wealth of electronic records of social and cultural memory. Our current research investigating digitisation procedures shows that whilst being beneficial to the general public in terms of access to many previously hidden collections, digitisation is proving to be problematic for both the custodial community and the original resources, especially in the case of photographs. In particular the primary focus of recent digitisation projects has been 'access' (See, for example [11]). Our work suggests that putting 'access' as the overriding goal is certainly not neutral, and can be detrimental when it comes to other issues in collection management and sustainability. The reasons for these problems are numerous: lack of funding and resources, bad comminication between custodians and technologists, bad project management and planning.

However we look in detail at a digitisation programme undertaken by a local history library which has balanced access with other collection management issues, and has succeeded in developing a well used online collection, where other well funded projects have failed. We conclude by discussing whether general lessons can be learnt from this success.

Methodology

Over the past two years we have interviewed 21 custodians of historical photograph collections largely selected from the Library and Information Commission's Directory of Digitisation Projects in UK Local Authority Libraries and Archives [12]. The interviews have taken the form of semi-formal note-taking and pro-forma interview or tape recorded interviews and work practice observations. We have also collected quantitive data from questionnaires which will be analysed and reported in later work – it is the qualitative interview data that we predominantly report here. Our initial analyses of the quantitative interview data support the broad conclusions presented in this paper.

The digitisation projects we have looked at range from those in large, public-funded institutions to those in small local history libraries and specialist subject libraries. The projects often involve the digitisation of mixed media materials from local collections, to which members of the community are sometimes invited to participate by adding their own oral, written, or photographic information and memories to the website.

Our broad aim is to assess the effect that digitisation is having on custodial practice by defining 'values' held in primary sources and their digitised surrogates. We can then show how the process of digitisation alters those values, and ultimately suggest well evidenced modifications to existing digitisation processes so that the digitised surrogates better represent the values of the primary sources. However analysis of the interview data has also raised several other issues concerning how digitisation projects are progressing and what effect they are having. It is these issues that we report in this work. The main emphasis of this study is historic photograph collections

in the UK, but we would expect the findings reported here to have some generality to other collection domains in other countries.

The impact of digitisation projects

The custodians we have interviewed all work on projects which make the assumption that digital access to 'memory collections' gives the public accurate information – that what they see and what they read are true representations of past events, places, and lives.

The projects we have looked at typically run a fixed term of eighteen months (ten months is the shortest, two years the longest) and are externally funded. The funding bodies typically work on the assumption that all they are paying for is the digitisation. It is assumed that cataloguing, housing and preservation are either all solved problems which have been dealt with as part of the core library activities before the digitisation project begins, or are small issues that can be dealt with as secondary issues as part of the project. Our interviews with custodians suggest that this is not the case, particularly for the small, specialist collections. It is particularly worrying that the funding criteria does seem to be establishing a 'Matthew Principle' ('He that hath, to him shall be given, but he that hath not, from him shall be taken even that which he hath') among library collections. Large libraries have whole departments dedicated to securing funding to digitise their already well managed collections. Whereas small libraries are struggling to put together evidence that their collections are well managed enough to warrant digitisation funding, therefore their collections lose public profile, and funding becomes even more difficult to obtain. Only one third of our interviewees used any established standards to guide the project development.

The relationship between the primary source and its digitised surrogate was the main focus of our research. In this paper we draw out the ways in which commonly applied digitisation procedures affect the relationship between the two, broadly categorised into selection, authenticity and representation issues. These issues may be pragmatic: due to failings in project management or lack of resources, or more systemic.

Selection

The sheer numbers and variation of photographic materials within archives means that very few, even well-funded organisations, have the resources to put entire collections online. Therefore, decisions have to be made about which materials to digitise. These decisions may be systematic or haphazard, but more importantly are typically not made clear to the sites' audience. The viewers therefore, are unlikely to know that they are not seeing the full picture. Nor are they being made aware of the context from which the images originate.

We asked custodians about the motivations for digitisation in their institutions. This has revealed that the reasons for selection are not always democratic or even custodially sound but may be driven by:

- subject (60% of projects); typically local scenes and events or those images that best reflect the content of the collection.
- use and familiarity (30% of projects); custodians select those items that previous use patterns show to be popular or useful to users.
- vulnerability (15% of projects); custodians select the images needing conservation treatment.

Other selection reasons given were:

- current commercial bias; what the custodians (or more typically their managers) believe will raise the collection's profile the most, or make them the most money,
- what is presently considered aesthetically pleasing,
- ease of digitisation, we observed one project where a photograph collection had been previously rather haphazardly partially catalogued by volunteers. At the beginning of the digitisation project the decision was made to digitise only those photographs that had already been catalogued, as this would give the easiest 'hit' of a large number of catalogued, digitised images,
- copyright issues; online copyright is still considered to be rather a black art by many custodians, therefore for safety's sake images may be selected for digitisation where the copyright issues are considered uncontroversial,

In approximately one third of cases a short-term project was undertaken by outside teams who were not familiar with the collections, and little consideration was given to the context of the archive from which objects were selected. This almost random selection can remove materials from their context, create fragmentation of collections as an entity, and remove clues and information about the provenance of materials. These findings emphasise the importance of inherent custodial knowledge about a collection, especially when selecting material suitable for digitisation.

Criteria for selection are often made on the perceived needs of the targeted viewer. Hence there is a danger of producing a 'turn-of-the-century view' shaped, as one archivist interviewee put it, by 'today's trends for nostalgia' rather than by online resources that will have sustainability over time.

These issues may not be of particular relevance to the general public as viewer. After all, to find access to details about one's own past is exciting enough, and feedback to the websites in question suggests that the public is more than happy to take what is currently available at face value. The question here, we argue, is one of authenticity and representation of historical material being accessed by the public. Further, the integrity with which selections are being made should be such that the research they undertake gives them as accurate a picture as possible.

Conway [4] suggested that selection is choice, but one could equally argue that selection in itself is an editorial mechanism – a management system used all the time in traditional libraries: what is on open access, what we can see and touch, and what is not available for public access. Users selecting images to view online are only ever selecting a subset of the images that the digitisation team have selected for them. The users' choice therefore only becomes meaningful if the motivations behind selection are trustworthy, explicit, endurable over time, and non-political. This could mean that selection may not be easy. It may be a long process, requiring the input of different professional opinions and it may mean that what is selected does not necessarily meet current populist views. Particularly in the case of 'memory collections', online in-

formation sometimes only gives the general public access to an edited view of history, rather than a more balanced view they would have if they were aware of the context from which the information originated.

Although making selection decisions based on use and familiarity may seem to be sensible and 'democratic', (because the project is delivering online what the custodians already know to be popular) it could be equally argued that doing so reduces user choice, by limiting the user's search results to repeated use of the same images.

Authenticity

The authenticity of a photograph is part of what makes it a primary source – that its provenance can be proven to be genuine adds to its value. Validating the authenticity of historical photographs, however, has always been problematic. Photographs have by tradition been particularly difficult to authenticate because of the reproductive nature of photography, its processes, its history and the sheer mass of production. (See [8, 9, 11] etc.) In the case of digital surrogates, with all the possibilities for easy manipulation it is even more difficult to assess the authenticity of the original unless its cataloguing and identification procedures were carried out at the time of creation. This is rarely the case, particularly with historical collections. Even a photographer as conscientious about recording his work as Ansel Adams, is known to have either mislaid, forgotten, or even deliberately thrown records of dates of photographs he created [1]. How can the authenticity of a digital surrogate be measured if, as Klijn and de Lusenet [10] suggest we can only rely on 'contextual clues such as the authority of the organisation presenting [the images].'?

Interviewees in our study confirmed that the lack of genuine choice for custodians combined with managerial and government pressure to digitise means that access is in danger of taking precedence over authenticity. Furthermore, according to conservation specialists we have interviewed, the individual resources themselves are often distorted both through manipulation and accidental loss, during the transformation from original to digital, not only because of human intervention but also because technology cannot always reproduce colour accurately, especially when dealing with the complexities of black and white photographic processes. The issue of authenticity is also particularly relevant to digitising photographs because of the amount of physical information carried in the original, in addition to their aesthetic properties. This transfer of information is a difficult task on many levels including the human components of visual analysis, emotion, and technical experience. Just how relevant these losses or distortions are depends very much on the intention of use. But in all cases, digital reproduction raises questions of authenticity.

Representation

Any representation of reality is always going to be a filter. Primary sources give a filtered view of reality, and digitisation is another filter on top of that. In all likelihood it will never be possible to define an archival or digitisation process which will not be found wanting by future historians. Without the support of the primary re-

source, historical objects taken out of context, changed during the process of digitisation, inevitably lead to the misrepresentation, or at least a filtering, of historical evidence.

Much has been written about photographic reproduction and its value as a representational medium, (See, [2] etc.) and it is not within the remit of this paper to carry those particular arguments further. However, the ease with which digital technology can change, substitute, and otherwise manipulate photographic material is highly relevant to examining the impact of digital reproductions being made available to the general public as evidence for building their own histories.

Our interviews confirm that the use of digital editing is widespread amongst technology practitioners but there is not always a record kept of the changes made. Although photographers and photographic printers have always 'doctored' photographs to some degree, it is the speed with which it can now be done, and that manipulations may not be immediately obvious to the viewer, that is cause for concern. In many digital projects, we have found that there have often been no guidelines given to digital technicians about the extent to which manipulation is acceptable, or that records should be kept. Further many scanners perform several colour manipulation processes without the user realising. It may be possible to switch these processes off, but it is only the very well informed user who will realise that these processes are occurring in order to know to switch them off or document them. Typically the choice for manipulations to be made is at the discretion of the technician, and it is unlikely that the technician is best qualified to make these decisions. This raises ethical questions about what level of information is represented to the public as historical evidence and their subsequent awareness of any changes or other manipulations made to the surrogate that differ from the original source.

Thorough and informative cataloguing is also key to improving the representation of a historical artefact. It is not only the case that good cataloguing helps users find items, but the better the cataloguing, the richer the contextualising information that surrounds an item and the better able a user is to appreciate it in its historical context. Funders assume that cataloguing is already done to an adequate standard before digitisation funding is allocated. We have seen that this is rarely the case; cataloguing is often done from scratch or improved on as part of a digitisation project. However, as cataloguing is not seen as the main outcome of a project it is often done in a brief, perfunctory way. We saw one project where individual photographs were catalogued by a single term, many photographs were catalogued by the same single term. This made finding both primary photographs and their digitised surrogates problematic for both users and custodians.

Discussion

There is a simplistic assumption that the digital surrogate is of equal value to that of primary objects, in that users can do everything with a digitised surrogate that they can with the primary source. On that basis the public can rely on the information they access. However, the evidence of this research suggests there are inherent problems

with keeping the same level of value in a digital surrogate, in that the processes of reproduction always changes the materiality of the object that has been reproduced.

Digitisation projects badly need what Bellinger [3] calls 'procedural accountability.' It is more important that current digitisers document and make the decisions about what they digitise and how they do it explicit, than whether the decisions they make turn out to be right or wrong. However, it should be stated that technology developers and experts entrusted with building digital libraries should be driven by a greater understanding of the issues involved in the selection of historical materials and the complex information they carry.

The speed of change and the rapid growth in access to surrogate information, overlooks the issues of authenticity and loss of information. Often it is not clear what constitutes a good website: it is not always to be found in the superior quality and ingenuity of the site but whether or not the information carried within it is authentic and sustainable. However, funding bodies wanting to see evidence that their money has been well spent will resort to simple objective measures like how many records have been put online.

If projects are not planned and well-structured from the start, we have found that they can create a legacy of problems for custodians left with responsibility for their maintenance, in two cases, as we have discovered, these problems can be so drastic that they can lead to a project's complete abandonment.

Clearly, lack of adequate funding is an obvious candidate for blame when it comes to projects delivering digitisations where the selection decisions, authenticity and representation are questionable. However there is no clear correlation in our work between project success and level of funding. Indeed one of the most successful 'projects' we have seen has no external funding at all.

A local history library case study

So far we have painted a gloomy picture of digitisation projects. The majority of our interviewees have expressed considerable concern that digitisation is not living up to its expectations, and is adding yet more stresses into the management of historic collections. We therefore move on to look in detail at a particular approach to digitisation undertaken by a local history library that is integrating mixed visual collections into a general online bibliographic catalogue for online access. This approach seems to be successful, and although not perfect, a lot of the concerns raised by our other interviewees appear to be being at least addressed, if not solved.

Like many local borough library services, our case study local history library is popular with the local community as testified by the steady growth in readers over the past ten years. The collections now take up an entire floor of a substantial purpose built library services block and it takes three full-time librarians to staff. True to the nature of most local history libraries, the collections consist of mixed media, which are difficult to access and store because of their diversity (sizes and materiality), and physical vulnerability.

Programme planning

The library staff are well versed with the difficulties associated with access to photograph collections which had been the first motivation for wanting to digitise them. Having studied other similar digitisation projects and discussed concerns with colleagues from within the library and archive community, the library staff made a plan for digitisation. The objectives of the plan were not technically ambitious, and, as objectives, were similar to those of most other digitisation projects we had looked at. They included carrying out a survey of the photographic holdings, making selection decisions based on the survey, cataloguing the collection using the existing online catalogue system, digitising images and attaching the digitisations to their catalogue entries.

The distinguishing feature of this approach to digitisation is that no attempt has been made to seek external funding to support the project: the plans are to be fulfilled as part of the normal day to day running of the library. In this particular case study, the problems that normally arise from employing outside project staff are eliminated by using existing library and IT staff working as a team. Apart from the cataloguer, who works full time on the photograph collection, each member of the team has their own area of responsibility to the digitisation programme which they fit in with their everyday duties. The cataloguer is the only full time member of staff employed on the programme. Having worked for the library service for over 20 years, he has developed a deep knowledge of the collections, and is experienced in dealing with reader's inquiries. The cataloguer's background plays an invaluable role in identifying material and structuring the descriptive catalogue which is the strength behind this project. The input manager (who is also the technical leader responsible for producing library's website), and the scanning technician both integrate their digitisation tasks into their daily schedules.

The digitisation programme

An initial survey of the photograph collections was made in order to identify vulnerable or damaged photographs and negatives. This first trawl of the collections enabled the cataloguer to make a preliminary selection for a test trial of procedures. Delicate articles (such as glass plate negatives) were assessed by colleagues from the archive service and sent out to a recommended museum photographer for photographic copying and digitisation.

It was decided that the cataloguer should try to create as many fields as possible (within reason), that a user may need when searching the database. Once catalogued the photographs are passed on to the scanning technician in small groups at a time. When scanning has been completed, the photographs are returned to the cataloguer who box files and shelves them according to their reference numbers. To help promote the collections, the cataloguer also writes a weekly column for the local newspaper in which a picture is discussed and readers are invited to feed back information about it to the library.

For the first scanning trials they experimented with JPEG format at 600dpi's but they found this took up too much memory for their system. They now scan most pho-

tographs at 200dpi's using PDF. If a user makes a special request, for a higher resolution or a different format then they are happy to respond but will make a small charge for doing so.

The input manager is at the end of the digital chain in that he receives electronic files of the images from the scanning technician, and descriptive data from the cataloguer. In interview the input manager stressed the importance of pre-planning and discussion between the different members of the team, as well as making an effort to keep up with other people's experiences in the domain. He also emphasised the importance of keeping things as simple as possible and the need to work steadily to achieve what is possible within specific circumstances. The philosophy behind the programme is that it is better to do a little well, than a lot and mess it up. 'You can't have all your cakes at once. You have enough cakes on there... so you're up and running... then you can look at other things and add bits and pieces to it. We know that what we can offer now is selective and limited but we are building all the time and we will finally reach the stage where we practically have everything.'

Other useful information, such as an Ordinance Survey grid reference is added to some of the illustrations so that the user can see where a specific place or building is located. The website also has a feedback page for adding or correcting information but most of the feedback about the images comes from the cataloguer's weekly column in the local newspaper.

The intention is to continue updating the website until the entire photograph collection has been catalogued and digitised, along with the odd painting, drawing, or map as needed by researchers. They also intend to improve the site, adding further facilities as work pressure allows, for example by adding and giving information to cover more towns and villages within the area and perhaps adding an audio facility.

The outcomes of the programme

Over two years the programme has so far digitised two thousand (of ten thousand) images with full and thorough cataloguing and has also been very successful in generating user feedback and comment about the images. Only one serious problem was identified by the staff during these interviews; they believed there was a weakness in the quality of their scanned images. It is felt the images cannot be scanned to best advantage because of the size of files required to do so, and the time they can presently allow for scanning procedures. However given that the photographs are carefully catalogued and housed, it is not problematic to find individual primary sources and digitise them at high resolutions should users request them.

The aim of the programme is to eventually digitise all the photograph collections, and in that sense selection decisions are not important. However given that the programme will continue over several years selection decisions are being made as to which items get priority. These decisions were intially made based on the original collection survey, but can also be modified based on user requests.

The determination to place both user needs and the cataloguing of the photograph collection firmly at the forefront of the programme's objectives, is the reason that in terms of financial budget and time, the catalogue was given priority. As discussed in

the previous section in many projects, we have found that cataloguing is an area which is often hastily pulled together, (if at all) where the most important objective is seen as the number of images that can be put online in the shortest time. Detailed, descriptive cataloguing is a time consuming task but is also essential if a project is to have any stability or sustainability.

Just as an analogue library is constantly growing and changing, so too is this digital library as more ideas are implemented and new images added. This is a dynamic library that is being steadily built within the current capabilities of funds and staff, for the purpose of meeting the needs of a specific community.

Conclusions

It is an easy assumption to make that the problems with digitisation projects we identified at the start of this paper are caused by lack of funding; none of the custodians we interviewed complained of having too many resources. However this assumption is too simplistic; the evidence of our interviews strongly suggests that it is the artificiality of deadlines and outcomes imposed by short term projects that causes the problems more than lack of resources.

It is interesting to note that when we have discussed these issues with individuals from the funding bodies, or who have managed the large flagship digitisation projects in the UK, they have candidly asserted that most, if not all, of the projects funded so far have been exploratory techno-centric projects primarily aimed at discovering what opportunities new technology can offer, rather than looking at how new technology impacts on collection management and end users. 'Sustainability' of digitisation projects has been seen to be problematic for several years, but the solutions suggested by the funding bodies (advertising, affiliation, subscription, etc) are untested. Our evidence suggests that sustainability is a problem because of the monolithic product centred focus of project work. A much better model for sustainable, well managed digital resources is shown by the case study described in the second half of this paper: digitisation is considered as a *process* to be undertaken as part of the normal core activity of the library, rather than as a *product* which at some arbitrary date is 'finished'. It is the pressure to finish a digitisation project that causes corners to be cut with cataloguing and other long term collection management issues, rather than lack of funding.

An evolutionary approach provides other benefits. A product centred approach is typically based around a bureaucratic 'waterfall' design approach, where requirements are established at the beginning of the project (hopefully, but not always, in liaison with end users), then a product is designed and built for the main duration of the project, and then tested against these requirements towards the end of the project. It is well documented [5] that this approach does not sit at all well with user centred design (eg. [7]). Even if the requirements are established with end users in mind, then the resulting product does not get tested with users until near the end of the project, by which time it is usually too late and too expensive to make any serious changes in the light of user feedback. Even this unsatisfactory approach is not reflected in prac-

tice: not one of the projects we looked had conducted *any* evaluation of their deliverables.

A more evolutionary approach means that small amounts of content can be digitised, put online and subjected to public scrutiny (recall how the cataloguer wrote a weekly column in a local newspaper, inviting online comment from local users). Both the content and the delivery system can then be incrementally, therefore easily and cheaply, improved based on user feedback.

We need to be careful making very general claims about the case study being a model for all digitisation projects as it may be simply a happy concatenation of surface events that causes their approach to be a success, rather than there being some more profound difference. The case study is unusual amongst those we have examined for several reasons, some of which may seem purely random: the placement of staff in a particular place, at a particular time of technology's development; a photograph collection that is in numbers, manageable, and in format, suitable for digitisation; a Borough Executive that encourages innovation and welcomes flexibility in its employees, and a Library, Archives and Museums Service that communicates across disciplines. A failure in any one of these elements would probably mean that their approach to digitisation would become problematic, whether they were using an evolutionary or product centred approach. We would argue, however that the case study's approach is likely to cope much better with serious problems, such as knowledgeable and experienced staff leaving, whereas a failure in staff retention would almost certainly cause a short term project to fail completely.

The other important factor is communication: from the beginning there had been a constructive dialogue between the cataloguer and the input manager out of which emerged the initial digitisation plan and the will to drive it forward. A failure point we have seen in other projects has been the librarians' inability to express what they actually need from the technologists in terms that the technologists can fully understand. Having a librarian (the cataloguer) and a technologist (the input manager) who spoke each others' language undoubted helped considerably.

Digitisation of historic resources is costly and complex. Requirements and expectations can legitimately differ greatly between institutions. However the technology underlying digitisation is now becoming stable and cheap enough that libraries can begin to consider digitisation as being a core activity alongside their more traditional activities such as cataloguing, indexing, conservation, etc. rather than being a separable, externally funded 'bolt-on' activity. Our research suggests that such a move would be beneficial in several ways.

To successfully merge public access and commercial expediency with promoting heritage collections, there needs to be less techno-centricity (less worrying about what current technology can do, because that changes rapidly), and more worrying about what stakeholders actually need, and how technology can be made to meet those needs.

References

1. Adams, A., Examples: The Making of forty Photographs, Bulfinch Press, 1984.

2. Barthes, R., Camera Lucida: Reflections on Photography, Vintage, 1993.
3. Bellinger, M., Information Representation: The case for surrogates. Parallel Lives: digital and analogue options for access and preservation. Joint conference of the National Preservation Office and Kings College London. Digital Consultancy Service. See http://www.kcl.ac.uk/humanities/cch/kdcs/content/conf2003summary.htm. 2003.
4. Conway, P. The Relevance of Preservation in a Digital World, North Eastern Document Conservation Centre, Andover, USA. http://www.nedcc.org/plam3/tleaf55.htm. 1999.
5. Dix, A., Finlay, J., Abowd, G., Beale., R. Human computer interaction, Pearson, 2004.
6. Dempsey, L. Scientific, industrial, and cultural heritage: a shared approach: a research framework for digital libraries, museums and archives. Ariadne issue 22, http://www.ariadne.ac.uk/issue22/dempsey/intro.html
7. Faulkner, X. Usability engineering, Macmillan, 2000.
8. Frizot, Michel, A New History of Photography, Könemann. 1998.
9. Jeffrey, I., Photography: A Concise History, Thames and Hudson, 1996.
10. Klijn E. and de Lusenet, Y., In the Picture: Preservation and digitization of European photographic Collections, European Commission on Preservation and Access. http://www.knaw.nl/ecpa/PUBL/pdf/885.pdf. 2000.
11. Martin, E. and Ride, P. (eds) Collecting and Preserving Old Photographs. Collins. 1998.
12. The Museums, Libraries and Archives Council, Listening to the Past, Speaking to the Future, Report of the Archives Task Force, 2004. See http://www.mla.gov.uk/documents/atf_report.pdf
13. Parry, D. Directory of completed, current and planned projects in libraries and archives. In Virtually New: Creating the Digital Collection. Final report to the Library and Information Commision. pp56 – 105. See http://www.ukoln.ac.uk/services/lic/digitisation/dig.doc. 1998.
14. UNESCO Memory of the world. Available from UNESCO website: http://www.unesco.org/