

# Shock of the Net

by  
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## 1. Introduction

It would be safe to assert that everyone reading this paper has used at some time in their academic and working lives the Encyclopaedia Britannica. Britannica is a source of information held in the highest regard, its brand name is one of the most recognisable academic icons of the western world and one would have thought with its pedigree that it was unassailable. Then along came computers, the World Wide Web and Microsoft's CD ROM Encyclopaedia, Encarta.

The unthinkable happened: Britannica's sales of its bound volumes halved this decade, forcing it into the red. With Encarta selling for \$50, and sometimes given away with new computers, Britannica was forced to rethink its sales strategies and one-product policy. In Australia, its sales staff of 120 was disbanded, it produced a CD ROM version of its encyclopaedia and created an online presence to complement the CD ROM and encyclopaedia. The

delivery was opened up to include direct marketing, major retailers and educational institutions. (from The Australian newspaper, 15/1/98 p.24)

Is there any message in this for art galleries? Is it irrelevant or are you in the information business too? Do you have a respected brand name? Do you still rely on the same means of delivering your services as you always have? Do you deliver the same services as you always have? Do you regard your institution's name and standing as being of high repute and its longevity a sure thing? The management of Britannica would have said yes to all of these questions only a handful of years ago!

If galleries fail to utilise the World Wide Web to improve access and equity of access to their collections; if they fail to employ digitisation programs to maximise preservation and collection management; if they fail to add value to their collections in this age of information; and if they fail to train their staff adequately and resource the new business appropriately then one day galleries may just wake up to find that their collections are no longer sought after nor supported by government and the private sector and their organisations are no longer viable. The Shock of the Net for these galleries may be terminal.

This paper contends that the online world is rapidly changing the expectations of the consumer and that whilst galleries have an obligation to preserve the national heritage and culture, they also have an obligation to provide optimum access to their collections – that is, physical as well as virtual.

Those galleries and associated art libraries that do not embrace this Digital Age, that do not successfully deal with the Shock of the Net will lose market share to those that do and to new enterprises such as the growing online reference sites and virtual galleries (eg [www.maap.org.au/shoreline](http://www.maap.org.au/shoreline)). Just as Britannica experienced, those galleries that may have enjoyed superiority judged by the old coinage may well slip behind those that read what the market wants and provide it.

This paper draws from a report I prepared, with assistance from an Adelaide lawyer Mark Minarelli, for the Australian government, entitled *Digitisation of Collections*. The report was tabled in December 1996 and dealt with the public policy issues that the Federal Government would need to consider as art galleries, libraries, museums and archives digitise their collections and make them available online.

In this paper I will:

- outline what I believe are the chief facets of the Digital Revolution that will impact on galleries
- explore the character and nature of that change for art galleries; and
- provide some suggestions as to how art galleries might best manage change.

## 2. The Digital Revolution

This section presents the proposition that the Internet is here to stay and that its characteristics, what it enables us to do and the expectations it creates make it a powerful agent of change.

### 2.1 The Internet Juggernaut

We are living in the middle of a revolution in the way in which we consider, handle, swap and trade information. Just as the industrial revolution was spurred on by a machine - a steam pump - so too is a machine at the heart of the information revolution: the computer. The early 1980s saw the beginnings of this revolution - it was in 1982 that Time Magazine announced its Time Man Of The Year: the Personal Computer.

Information technology, multimedia and the Internet now receive enormous press coverage and are terms known to most people in developed countries - a recent report (The Australian 15/9/98) suggests that only 10 million people in North America have not heard of the Internet. The uptake of these new technologies has been rapid and the number of participants keeps growing. These are not fads; they will not go away because they are increasingly commercially driven and they are powerful business and education tools.

A report released to the US Congress in April 1998 stated:

Internet usage in general (both new users and existing users) is doubling every 100 days

1 billion people expected to be on the Internet by 2005  
\$6 billion in goods and services were sold on the Internet in 1997 ... \$300 billion by the year 2002

7% of all airline tickets in the US expected to be bought over the Internet in 1999

20% of all books sold in the US will be sold over the Internet by 2000

Five months later, a further US study by Nielsen Media Research and the non-profit industry association CommerceNet (as reported in The

Australian newspaper 15/9/98) was released that found:

79 million North Americans now surf the Net - a 36% increase in 12 months

43% of Net surfers are women

48 million online shoppers

50% of the population between the ages of 16 and 34 are Internet users

13 million people over the age of 50 are Internet users

(for the full report see-

[www.commerce.net/research/gideon/index.html](http://www.commerce.net/research/gideon/index.html))

Closer to home, an Australian report published in April 1998 and commissioned by the Commonwealth Department for Industry, Science and Tourism reported the following (as of April):

- There are approximately 1.6 million Internet users in Australia
- 11% of businesses have a web presence - the market size has doubled since late 1996
- 35% of businesses with a web presence claimed the site was significant to their business - 36% said it wasn't
- online purchasing by Australians has tripled over the past 18 months
- by the end of 1998, it is expected that most top 1000 businesses in Australia will have an online presence

Whether art galleries like it or not, the growing power and functionality of modern technologies is creating an unprecedented demand for information and an increasing expectation that access will be quick, easy and affordable. Public demand in this brave new world is poised to redefine how librarians package, market and manage the collections they hold and manage on behalf of the public.

### 2.2 New Technologies

#### 2.2.1 The tools of access

The computers, modems and software now available to users to search, vet, view, edit and reproduce content from on-line digital archives are more powerful, relatively less expensive and more flexible than ever before. Improvements continue to unfold on a monthly basis. The purchase of multimedia and Internet equipped personal computers by households is growing which means more and more people have the capacity to access digital archives via the Internet.

By the year 2000, there will be very few workplaces and schools in developed countries without access to at

least one computer with the capacity to access the Internet.

The function of computers themselves is set to undergo sophisticated changes. Many observers believe that the television and computer will merge into one unit offering interactive live video, audio, video-conferencing plus even more computer power than we have today. The TV-PC will offer people the unparalleled opportunities to communicate with one another and power to access and view content on the Internet.

#### 2.2.2 Electronic commerce

One of the impediments to the use of the Internet for commercial transactions has been the real concern over security of those transactions. This stumbling block is being rapidly broken down by the likes of Visa, Mastercard and American Express who have been co-operating to produce standards and procedures for the use of credit cards on the Internet. Meanwhile software giants such as Microsoft and Oracle have been developing encryption technology to ensure the safe transport of credit card numbers across the Net.

Banks are increasingly forcing customers into online banking as it is so much cheaper for them than across-the-counter banking. Of this we can be certain: both demand and supply led initiatives to purchase products and services across the Internet paid for by credit card and/or electronic cash will increase at an exponential rate from 1998 onwards.

#### 2.2.3 Delivering digital archives

At present, content on the Internet is delivered to most users via the telephone network. The cables that carry the data are made of copper wire and were designed to deliver voice data yet have proven capable of delivering fax data, colour still images, animations, "live" audio and even video (though of an unsatisfactory frame-rate and quality).

By using fibre optic cable (broadband) instead of copper wire, it is possible to deliver video, audio and animations of very high quality along with all other forms of data at very high speed and at great volumes. Telecommunications companies in Australia and North America are establishing broadband services in major cities in order to provide a superior service and to increase income as a result of increased traffic on their network. There is every reason to believe their expectation that consumers will quickly adapt to the quality of reproduction, speed and interactivity made possible by fibre-optic cable and cease to be content with anything of a lesser quality. They will increase their usage of the Internet as they are lured by the quality and quantity of material available to them.

## 2.3 Democracy and online content

The rapidly growing number of technology-enabled consumers in developed nations is creating a vast pool of people seeking information in digital format in the areas of education, training and entertainment. There is every indication that governments and numerous public and private organisations will also increasingly expect access to information in electronic format held by art galleries.

Access to digital collections via the Internet liberates consumers. The online collections are accessible to those who for reasons of location, physical disability, working hours, or nature of their work are unable to physically visit the gallery during its normal hours of opening. In addition to this group are those who become stressed in public or who simply find visiting institutions too difficult or inconvenient.

If for no other reason, art galleries will be compelled to digitise their collections and make them available online because the public and government agencies will increasingly demand electronic access to their collections.

## 2.4 Doing traditional tasks better

Not all agents of change come from outside the art gallery world. Many within the art gallery sector are turning to digitisation and digital archiving as tools that enable them to do their traditional jobs more effectively and efficiently.

### 2.4.1 Collection management

Many institutions are viewing the digitisation of their collections for online consumption as an opportunity to adopt new and more effective collection management strategies and practices. For many institutions the digitisation process will help reveal the extent and actual contents of their collections.

Once an institution embarks on a digitisation programme it is likely that a number of in-house benefits will emerge.

- research by curators and in-house specialists will be made easier and more effective
- conservation of material will gain a new emphasis and will be enhanced
- the necessary cataloguing and resulting image bank of the collection will provide valuable collection management information

### 2.4.2 Preservation of objects

The digitisation of cultural items and the resultant digital archives offer some obvious and potentially powerful aids to preservation.

- handling and use of original items is minimised thereby reducing the possibility of damage from mishap, overuse or exposure to hostile environments
- the digital image provides a backup copy (or copies) of the original
- digitisation can offer an immediate replacement strategy for items that are on the verge of complete deterioration

Digitisation may offer an additional but less direct boost to preservation efforts. Assuming the digitised images are available via on-line services then wider public access to items may increase awareness of our cultural heritage - and a gallery's collection! These potential outcomes would validate and possibly help fund further efforts to preserve that heritage through digitisation and other methods of preservation.

## 3. How might art galleries and their libraries be affected?

Having examined the major agents of change, what are the fundamental characteristics of that change? What is changing? What will be the impact on art galleries? What assumptions have we always made about art galleries that need re-thinking?

### 3.1 Is it a gallery, museum or library? Does the consumer care?

The very nature of the Internet breaks down the walls and geographical boundaries between collecting institutions. Search engines with their omnipotent eyes find information for the researcher no matter what the source - gallery, museum or library. The end user cares less about what type of institution the information comes from so long as it is accurate and answers the query.

As Boyd Rayward, says in his, *Libraries, Art galleries and Archives in the Digital Future: The Blurring of Institutional Boundaries*

“Libraries, art galleries and archives in our society have emerged over the centuries as important organisational components of what I have called society's information infrastructure. Their roles and functions, as they have developed over this period, are the expression of a variety of cultural and social practices related to education, research, artistic creativity, entertainment and recreation. Until recently the distinctive differences between libraries,

art galleries and archives have rested in part on the formats of the typical artefacts that have been accepted as their special province. Specialised techniques have been required to manage these different formats. These techniques have created organisationally prescribed ways of using the artefacts by the various clientele permitted access to them but something was lost in these immense gains of organisational sophistication. What has developed does not reflect the needs of an individual scholar or member of the educated public interested in some aspect of learning or life. For the individual the ideal is still the personal cabinet of curiosities that contains whatever is needed for a particular purpose or to respond to a particular interest, irrespective of the nature of the artefacts involved - books, objects, data, personal papers, recorded image, government files.”

If we accept that those using the Internet to seek information have little concern whether the information has come from an art gallery, museum, library or say archive, only that they have access to it and that the content has integrity and is reasonably priced, then this has significant ramifications for the place of art galleries as distinct, stand-alone entities in a Digital Age. Will joint online ventures between various types of collecting institutions be mandatory to survival in the Digital Age?

### 3.2 The business of art galleries

It may seem too obvious a statement to make, but almost all art galleries were established in the pre-World Wide Web world. As a result their charter, mission statements and the expectations of their management and in some cases boards, do not take into account, in any formal sense, the online world. Charters and mission statements tend to presuppose traditional functions and a physical location only in which objects or material are displayed and to which the public is permitted access. Institutions are frequently, therefore, not well served or adequately guided by the legislative frameworks or guiding missions within which they live.

Pressure is being exerted on most art galleries to become more profitable; to recover costs where possible and to be less reliant on the public purse. However, often their charters do not cater well for profit-making ventures and in many cases, the public benefit purpose is not clearly defined in their legislation or mission statements and in a period of profound change this will fundamentally disadvantage the institutions.

The agents of change discussed in the previous section will push art galleries into new business models and they will have to respond or wither. Being a business

will necessitate changed organisational structures, skills and strategies. While technological change is one of the key features driving the transition of art galleries into businesses and the convergence of institutions, the challenge will be to not allow technology to dictate the agenda, but rather to use the technology to give new meaning to the role of art galleries.

An important issue for the art galleries is to delineate clearly, in consultation with governments, their owners and each other, the dilemma between their traditional non-profit public benefit role and more commercial arrangements needed to achieve the potential of the online world.

### **3.3 Losing business to the Benevolent Monopoly**

The high level of digitisation output from collecting institutions in the United States and Europe, and the sheer number of their institutions placing collections online, has resulted in a predominance of images and collections from US and European galleries on the Internet. A search for information on say, Gauguin, Picasso or Pre-Christian Roman art, is very likely to result in finding content held by institutions on those continents.

To compound matters for Australian galleries, if an online user wants information on, say an artist, he or she may decide to guess a web address (ie URL) of an institution rather than use a search engine. In this scenario users will more than likely select the institution that either comes to mind most readily or one that they have used before (and bookmarked). Thus brand-names such as, Getty, National Gallery (UK) and the Louvre will prove difficult for Australian galleries to compete with - just as soft-drink manufacturers around the world (other than the owners of Coke) find much to their dismay that most people think of Coke when they think of soft-drink.

As more and more Australian researchers, enthusiasts and others turn to the Internet for their information, what impact will the domination of the US and Europe have on the sustainability of Australian art galleries and art libraries as we know them today? How are they to compete for online customers? How might their acquisition and digitisation policies meet the challenge?

### **3.4 Losing control or the sharing of the spoils ?**

The Internet has now made it possible for consumers to be collectors and curators of their own virtual art gallery and/or art library.

Whereas the public in say, Adelaide or Auckland, has always had to accept the decision of the collecting institutions' management as to what was placed on the walls, shelves and in display cases and what special exhibitions will be mounted, the public can now make those decisions for themselves as they build their own virtual art gallery and mount their own private online exhibitions.

It is possible then to imagine that the specialist librarian of the future may not be associated with an art gallery nor might they have learnt their craft as most have today. They might work from home, providing a specialist helpdesk on a sculptor, period or issue in art and their skills will reside in knowing what has been published on the Internet and how to crawl the Net as much as knowing what is available in print.

### **3.5 Losing our cultural identity**

Hand in hand with the dominance of the North American and European galleries on the Internet is the domination of works by North American and European artists. Whilst this domination will not be overcome in our life-times, it is nevertheless extremely important to the survival of the Australian culture and certainly to its artists and artistic heritage that the Internet's digital archives include a comprehensive collection of works by indigenous and European-Australian artists and commentary on them. If Australian galleries do not undertake this task, who else will?

In the absence of sufficient online material on Australian artists, will Australian school children turn even more to the American and European artists for whom there is an abundance of material? In order to combat this, should not Australian art galleries and art librarians concentrate their resources on collecting, digitising and adding value to content native to their land, heritage and culture?

### **3.6 Just-in-time writing and publishing**

It cannot be assumed that all commentary on art will appear in the future, as it has done for hundreds of years, in magazines, periodicals or books. As the power of computers increases and as the capacity of modems and connections increases, multimedia presentations using sound, video and animation will be possible across the Internet resulting in a publishing revolution.

In the online world, anyone can be a critic and publisher because the old distribution channels controlled by large publishing houses that dictated

how and when a book was bought no longer applies (eg the rise of [www.amazon.com](http://www.amazon.com)). Writers will be encouraged to publish chapters of books as they are written and the user will be able to synthesise these with multimedia presentations downloaded from the Internet.

Online multimedia presentations will be compelling and will establish new benchmarks for what students, enthusiasts and the public expect. Coffee-table art books will remain in demand but there is more than likely to be a decline in the quantity and range of such publications.

Academic commentary and research will move more and more to the online world. Writers will publish online more frequently than they did in print, new online publishing houses will commission shorter pieces and researchers, students and the general public will download and print articles at their convenience.

### 3.7 Electronic art librarians?

Electronic finding aids are becoming increasingly sophisticated enabling surfers to enjoy a high degree of success in finding what they are looking for without leaving home. Portal sites like the Australia's Cultural Network ([www.acn.net.au](http://www.acn.net.au)) and the new online reference sites such as [www.askjeeves.com](http://www.askjeeves.com) and [www.infoplease.com](http://www.infoplease.com) also mean that students, researchers, enthusiasts, artists and librarians themselves have a whole new and powerful means of finding, collating and editing information.

These electronic tools will erode what many perceive to be the ancestral right of the specialist librarian to be the source and/or locator of information.

As finding online digital archives and then exploring them becomes easier and more widely adopted, any gallery's archives can be found. This has quite a profound impact on art galleries. It effectively means that any digital archive no matter where it might be, no matter what its pedigree or quality will be found and accessed by users where-ever they might be in the world. Will the user care whether the information came from a webserver sitting inside the MOMA or the National Gallery of Victoria or from a private webserver sitting in an enthusiast's home who has become a self-styled, self-made curator of a fabulous digital collection of 19<sup>th</sup> century Dutch porcelain?

## 4. Meeting the challenge

The two previous sections of this paper examined the major agents of change and the fundamental characteristics of that change. This final section looks at how art galleries might best manage change. That

is, how they might best adapt to operating in an online world which will see the differentiation between collecting institutions blur and competition from art galleries, libraries and museums from around the world increase dramatically.

That the digital age is moving art galleries into new business models is a major tenet of this paper. It would be a mistake, however, to think that institutions were moving from one static, definable paradigm to another static paradigm. The truth is that there will always be change. Once that is recognised, art galleries can set about developing strategies to transform the challenges of change into opportunities.

If the transformation process is not dealt with appropriately it has the potential to disorientate institutions and their staff causing unnecessary stress, ineffective responses and lost opportunities. However, with the right preparation and appropriate change management strategies art galleries can be the masters of change rather than its servants.

### 4.1 Value Adding

Value-adding is the single most important activity an art gallery can undertake to remain viable in the online world. By value-adding to a digital object I mean providing:

- additional information to that which has been available to the general public when physically visiting the art gallery – eg extensive historical and social context, detailed provenance, links to other objects in the collection, hotlinks to other relevant digital collections
- multiple access points – give virtual visitors numerous opportunities to find objects in the collection and to realise associations between objects
- new ways of experiencing an object – eg. using holograms and 3-D effects; rotating an object giving multiple viewing points; using audio and visual to provide stimuli and information; animating or recreating the context of the object's original existence
- additional services – eg helpdesks, ability to download the object in multiple formats, copyright information, other art galleries with similar collections, reference books and journals relevant to the object

If all an art gallery does is make available online digital copies of items in its collection without value-adding to them in the manner described above then it will be bypassed by the user of the 21<sup>st</sup> century. Those that get it right in the 21<sup>st</sup> century will succeed; those that don't will be marginalised.

## 4.2 Equipping management for the digital age

The digitisation of collections by galleries, museums etc. and public access to digital archives via the Internet will, in the long term, have a fundamental impact on the functions and functioning of all collecting institutions. It is likely that departments and managerial positions will be re-fashioned and/or new ones formed to deal with such things as digitisation programs, copyright and commercial issues, new value-added services and maintaining digital archives. Those departments and managers currently operating in art galleries will most likely be undertaking quite different tasks, using new tools and responding to different sets of priorities and new demands ranging from the curatorial to the commercial.

Overcoming the *shock of the Net* effectively and efficiently requires an enormous enterprise, collaboration, skill and vision on the part of the management of collecting institutions. Management will need to give of their time and exercise their expertise in contemplating and finding solutions to the myriad of management issues amongst which include: the re-deployment of human and physical resources; budgeting for digitisation and the institution's online presence; staff training; acquisition and maintenance of new equipment; the preservation of digital objects, prioritising what to digitise; and maintaining current projects. Management may need to acquire new sets of skills in order that they might deal appropriately with the new issues associated with a digital world.

Given the scope of this new undertaking and the existing commitments of management, it will be highly desirable to establish methods of encouraging and supporting professional development in appropriate areas for management and to explore support mechanisms that will minimise the burden of change and maximise the efficiency of the transition.

The methods and mechanism that might be employed in this regard include:

- seeking outside expert advice and direction issues such as: risk management and change management strategies; developing an online strategy; how to manage staff training and re-skilling
- accessing web sites that provide professional development opportunities and information eg [www.copyright.org.au](http://www.copyright.org.au) – Copyright Council  
[www.acn.net.au](http://www.acn.net.au) – Australia's Cultural Network  
[www.digitisation.net.au](http://www.digitisation.net.au) – Digitisation Forum Online

- establishment of reference group with other collecting institutions nearby to promote collaboration and sharing of experiences and lessons learnt at a regional level

### 4.2.1 The prevailing management environment

The managers of art galleries hold key positions in the decision-making process with regard to their online policies. However, it is a point of fact that most managers of art galleries, like managers of most similar sized commercial organisations, grew up in the pre-information technology age and certainly the pre-World Wide Web age. For most, their schooling and professional training pre-dates electronic calculators, word processors and fax machines. They were taught and accessed information in what are now termed, *traditional* methods, and they mainly disseminated their ideas on paper.

The speed and all-embracing nature of this revolution challenges managers to anticipate the changes and to adapt themselves and their organisations appropriately. It must be said that the successful transition to the online world and to new business models by each art gallery will depend to a large extent on the degree to which their managers successfully adapt to the Digital Age.

## 4.3 Staff training

Just as managers of art galleries will require well targeted professional development to help manage their institutions effectively in the digital age, so too will their staff require specific training in new disciplines and techniques. Institutions will require staff whose combined skill-sets embrace functions such as:

- preservation, archiving and disposal of digital objects
- cataloguing and indexing digital objects
- the use of online navigational tools and finding aids
- the monitoring of digitisation procedures and performing of quality reviews
- technical knowhow in operating digitisation hardware and software
- web graphic design and authoring
- online marketing strategies

The sharing of human resources between institutions that are in close physical proximity of one-another is a resourcing strategy that has much to recommend it and deserves careful consideration. The sharing may take the form of an individual or team that has

particular skills in one or several aspects of digitisation consulting to all art galleries in a capital city or region. In addition, another model may see staff in one institution with specialist expertise in their cultural sector consult to that sector on a national basis. Possible advantages of these collaborative models are: the fast-tracking of online programs; the utilisation of best-practice by all participating institutions; and the dissemination of knowledge and skills which will increase the national pool of skilled personnel. An alternative is the establishment of at least one all-round skilled person who works solely in the one collecting institution. This approach is based on the premise that a rapport with staff, availability and an intimate understanding of the institution's ethos and vision are essential ingredients in successful consulting and cannot easily be achieved if the consultant is operating from outside the institution.

It is unlikely that one approach will serve the needs of all. A successful resolution to this issue is more likely to reside in an approach that recognises the differing circumstances between institutions themselves and which offers various models for the timely provision of suitably trained staff.

#### **4.4 Know thy market and then differentiate**

In the online world, competition amongst art galleries for home page hits and for securing customers for digital archives will be intense. And it is not just the art gallery down the road that will be the competitor to watch but the Getty, Louvre, Victoria & Albert – the competition is any gallery, anywhere in the world that has gone online. To compete, art galleries will need to develop differentiators that separate them from the pack. Value-added services, effective web-site design, pricing of digital objects and marketing are all key elements in differentiating one digital archive from another.

Differentiating requires market intelligence. Art galleries have to get to know what the market wants – what objects in the collection will people be most interested in (this should instruct the prioritisation policy for digitisation of the collection), what are the price-points, what value-added services do people want and how can they be brought back to the site time, and time again. The market research needs to establish answers to these questions and to provide constant monitoring of the market-place in this regard.

#### **4.5 Collaboration**

In his paper presented at the First International Memory of the World Conference in June 1996, Ray Edmondson, from the Australian National Film and

Sound Archive, proposed this approach to addressing the preservation crisis facing audiovisual material the world over :

*“I believe coordinated action - national, regional and global - is a strategic necessity if we are going to save the audiovisual memory of the world. We haven't always been good at this. Now we must be. Much has been irretrievably lost; much more is on the brink; trained and committed people are the foundation of development; and we need the strategic and collective approach. Nitrate - and acetate - won't wait.”*

Although he was referring to audiovisual objects, Edmondson's plea for cooperation and collaboration at a national and international level strikes at the heart of the way ahead for tackling many of the significant issues raised in this paper. The online world has scant regard for the physical world's differentiation between libraries, art galleries, museums and archives, so those that can achieve effective collaboration between institutions across the sectors and within each sector will have an important competitive advantage over those that don't.

If we do not move efficiently and effectively to provide models and pathways that help resolve the complex issues facing owners and custodians of digital information, then we risk losing much of our respective cultural heritage and of jeopardising the benefits that digitisation and on-line digital archives promise.

#### **4.6 Budgeting for the online world**

Establishing budgets to undertake digitisation and digital object preservation can be a complex and often unsatisfactory exercise for art galleries and other collecting organisations. There are a number of inter-related reasons for this:

- general uncertainty as to what technology to acquire and under what acquisition model (purchase, rent or lease?) in a market-place in which new technologies and solutions are unveiled regularly and where purchase prices reduce over time;
- general uncertainty as to the nature and quantity of personnel and physical resources that are required or need to be redeployed immediately and over time; and
- the unpredictability of the rate of obsolescence of hardware and software and the resultant necessity for purchasing new equipment and for the migration of data.

In budgeting for digitisation programs, it would be prudent for institutions to engage in a costing exercise involving a thorough identification and costing of the physical and human resources required. The experience of the Australian National Film and Sound Archives and of the Australian Archives suggest that the most common cost items apart from the cost of hardware and software, include: research and development, the process of digitisation itself, and intellectual control, data transfer, storage and delivery systems, as well as for the training of personnel and the development of a range of appropriate management systems. Implied in this list, yet deserving of particular mention, are the cost of selection, cataloguing and indexing, and migration of data.

Of less obvious and immediate impact on the cost is the on-going cost of maintenance, staff training and provision and maintenance of electronic or personal "help-desks" in cases where the public or other institutions have access to the digital archive.

The complexity of establishing a budget is reflected in the somewhat complex situation where most institutions that embark on a digitisation strategy will need to undertake and maintain three parallel digitisation programs:

- digitisation of the collection as it existed pre-establishment of the program
- digitisation of additions to the collection post-establishment of the program
- preservation of digital objects - both those created via the digitisation program and those that originated as digital objects

These three programs will, of course, be running in parallel with all other programs and day-to-day activities undertaken by the institution and with which they will compete for the finite resources.

## 5. Conclusion

This paper has argued that the World Wide Web is forcing a re-defining of the role and business of art galleries. This re-defining is being brought about by agents of change that emanate from the online world such as:

- increasingly sophisticated computers and telecommunications
- the advent of sophisticated online finding and navigation aids
- the advent of online distribution models for books
- consumer demand and expectations

- the benefits that digitisation offers to collection management and preservation of objects.

Having examined the major agents of change, the paper then asked, what are the fundamental characteristics of that change? What is changing? What will be the impact on art galleries? What assumptions have we always made about art galleries that need re-thinking? Those questions raised discussion topics which included:

- the convergence of collecting institutions in an online world
- that changing commercial environment in which galleries are expected to operate
- the competition coming from overseas galleries and their digital archives
- the challenges posed by reference sites and virtual galleries
- the changing publishing and distribution models

Finally, in order to provide constructive and helpful advice on the ways to manage change, the paper dealt with areas such as:

- value adding
- market intelligence and differentiation
- management and staff training
- collaborative methodologies
- resourcing online projects.

The Shock of the Net can be overwhelming. It challenges so much of what managers and those currently working in galleries grew up with, are comfortable with and often feel passionate about. But like it or not, the Internet has infiltrated most sectors of business, government and personal lives and this is only the beginning. Change is here to stay! This paper contends that art galleries are not immune to the Shock of the Net and that those that do not establish and implement an effective online strategy will lose market-share to those that have done so in this increasingly online world. The result may be that one day management wakes up to find that its business is no longer viable because: its collection is no longer sought after by the public who find their information from a plethora of online sources to which it does not contribute; it is supported even less adequately by government because other institutions competing for limited public funds are being more innovative and are receiving public support; and the private sector and benefactors that have had to adopt their businesses to the online world perceive the management to be backward looking and the gallery a lame cause.