BUILDING COMMUNITY MEMORY THROUGH ON-LINE TECHNOLOGY

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SUMMARY

Around the world, communities are examining the issues of preserving cultural identity, documenting local history, promoting tourism and examining shared heritage. Until now, many communities have relied on official records, tradition, customs, stories (both oral and written), language, myth and similar means for the preservation of cultural identity and community memory. It is proposed that on-line technologies can provide a means of augmenting community memory through the provision of highly interactive and widely distributed means of gathering, indexing and archiving multimedia assets.

This project examines appropriate processes, tools and interfaces, along with the identification of functional elements required for building community memory through on-line technology. In as much as is possible, these processes, tools, interfaces and functional elements will be easily transferable and applicable across different communities. It is hoped that cohesive processes and associated tools for gathering, indexing and archiving multimedia assets for community memory will emerge.

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INTRODUCTION

"The new electronic interdependence recreates the world in the image of a global village" [1]

Marshall McLuhan originated the now popular phrase "global village" in the early 1960s. This was certainly visionary for the time, and the phrase has now entered general usage. During the 1990s the popular perception that the world is becoming "a smaller place" was pressed upon our consciousness through advances in transportation, telecommunication and information technologies. Is the world to become a global village? Several issues that have become apparent today were not as fully appreciated in the 1960s:

1. **The use of global communications to enhance local communication.**
As well as connecting people in diverse places around the world, the wide availability of telecommunication and information technologies has also encouraged geographically local communication.

2. **The fear of cultural imperialism.**
Is there to be only one village with uniformity of language, culture and custom? Concern over cultural dominance by the more technically advanced has resulted in a promotion of efforts toward the preservation of cultural heritage.

3. **The economic importance of tourism.**
Improvements in transportation and greater disposable incomes for much of the

[1] McLuhan, 1962

more developed world have increased tourism and it's resultant economic importance, particularly to less developed regions.

In light of the factors mentioned above, it is proposed here that on-line technologies can provide a means of augmenting what will be referred to as community memory through the provision of highly interactive and widely distributed means of gathering, indexing and archiving digital multimedia assets. These developments should assist in:

- The preservation of unique cultural identity and its propagation.
- The documentation of local history.
- Making available information of interest to prospective tourists and others.
- Fostering a spirit of community and shared heritage.
- Enabling cohesion with community "Diaspora".

It is assumed that each community will have a different starting point in building community memory through on-line technology. Some communities will have no first-generation assets (photographs, audio recordings, maps, etchings, drawings, paintings, books, etc.) and will have to begin by acquiring these assets. Other communities will have existing collections that will require equipment, software and procedures for digitisation. Still other communities will require tools and procedures for organising the digital assets they currently hold into a cohesive whole. To make the most of their multimedia assets, all communities will require highly interactive on-line tools to promote community involvement.

The aim of this project is to explore the possible tools, implementation of these tools, processes and the documentation of processes involved in building

community memory through on-line technology. It is hoped that cohesive processes and associated tools for gathering, indexing and archiving multimedia assets for community memory will emerge. No established standards for processes and associated tools currently exist. It is anticipated that diversity in both development and structure of community memory multimedia archives will exist for some time to come.

It is proposed that development be iterative, drawing on best practice from existing on-line communities where possible. The concepts, tools and processes developed should be easily transferable and applicable across different communities, and for those reasons it is proposed that where possible, open source software be used.

The criteria for success will be the successful identification of tools, functions and processes that may be used in building community memory through on-line technology.

Chapter 1

COMMUNITY MEMORY AND ON-LINE COMMUNITIES

In communities, as in individuals, the fundamental difference between knowledge and memory is persistence. An individual may at any given moment have awareness, knowledge and sentience, but only a portion of this momentary awareness is given persistence through commitment to memory. When an individual dies, their individual knowledge and memory perishes, with the exception of those memories that have been either implicitly or explicitly committed to means that ensure their persistence. A similar dynamic works within communities. Communities are made up of individuals, each of whom possess unique memories. Within themselves, communities possess many of the means through which individual memory may persist and be shared. Historical means of preservation include but are not limited to:

- Tradition
- Custom
- Language
- Writing
- Stories
- Myth

These historical means of building and preserving community memory may now be supplemented by technical means previously unavailable. This is currently a matter of particular importance and urgency. The popular emergence of

photography occurred around the 1860s. With the passing of the current older generation, the narrative to some of the earliest photographs will be lost.

Libraries, Museums and Community Memory

To the present day, libraries and museums have served as repositories for cultural and societal memory. These institutions are the organisational and technological forbearers of on-line archives.

The earliest known libraries were established approximately 5,000 years ago, and contained records of legal contracts, tax records and sales records. By the 6th century BC, libraries existed which housed collections of religious literary, historical, legal and business documents recorded on clay, wood or wax tablets. In the 5th century BC, what may be regarded as the first public libraries were established. To the present day, in many cultures libraries have been centres of preservation for cultural, societal, religious, artistic, economic and scientific information.[2]

The type of media found in libraries has grown to accommodate among others:

- Clay, wood, stone and wax tablets
- Papyrus and parchment scrolls and books
- Printed materials including books (etchings, fixed and moveable characters)
- Photographs
- Audio and video recordings
- Microfilm

[2] http://encarta.msn.com/

- Digital storage
- Hypertextual information

Museums are repositories for objects of beauty and worth. The first western style museum was founded around 290 BC in Alexandria, and included apartments, a dining hall, lecture hall, cloister, botanical garden, zoological park, and astronomical observatory. Objects such as surgical and astronomical instruments, animal hides, elephant tusks, statues and portrait busts were housed in the museum and used for teaching[3]

Reminiscing, Storytelling and Existing Sites

Much of the effort to date in creating on-line community memory archives has arisen out of reminiscing, storytelling, oral history and genealogical activities. Several relevant sites are listed here.

- Comm@NET[4]
  Comm@NET is an association attempting to develop a network of community multimedia archives – local databases of photographs, text reminiscences, oral history recordings and video clips. They have proprietary software tools and procedures for developing these archives.

- Collected Visions[5]
  Collected Visions is an essay-based archive with photographs. The same tools are used in the related site Connecticut Visions[6].

[3] http://encarta.msn.com/

[4] http://www.commanet.org/

[5] http://cvisions.cat.nyu.edu

[6] http://www.ctvisions.org/

- Infinite Humanity[7]
  The ambition of Infinite Humanity is to allow anyone to contribute materials which they promise to look after "for hundreds of years to come, free of charge". It is primarily text-based, but support for photos, voice, video, and non-English languages are promised soon.

- KOZ.com[8]
  KOZ.com produce full-featured proprietary community building software. Their "community publishing system" includes features like chat, message boards, home page publishing, calendars, forms and more.

- The Melrose Mirror and Satter-lights[9]
  These two essay-based archives include photographs and originated out of research by MIT's Media Lab.

Some geographically based communities have begun to assemble community archive material, but at the time of writing, most have not progressed very far.

Community Memory and Building On-line Communities

There is currently tremendous interest in the building of on-line communities. The term "building" rather than "creation" is more appropriate in that the process is continuous. Most sites, commercial or otherwise, want to attract as many visits and visitors as possible and building communities is an effective way

[7] http://www.123456789.net

[8] http://www.koz.com/

[9] http://silverstringer.media.mit.edu/index.html

to achieve this. Cliff Figallo[10] lists the following benefits for web site owners in fostering community:

- It creates steady streams of fresh user-originated content.
- It weaves a web of personal relationships that bind their participants to the site.
- It acts as a social flywheel, maintaining the momentum of interaction by feeding back into itself, drawing its members in and stimulating them to remain active and productive over time.
- It contributes to it's own support and rejuvenation, attracting, training, and socializing it's new members, and forging its own new directions for growth and expansion.
- It tells you, the host, what its members want and how to make your site more attractive and useful for them.
- It spreads your marketing message through the trusted grassroots grapevine of the Net in the testimony of satisfied participants, and in the stories that come out of its group interaction.

On the commercial side, John Hagel III and Arthur G. Armstrong[11] suggest:

> "The rise of virtual communities in on-line networks has set in motion an unprecedented shift in power from vendors of goods and services to the customers who buy them. Vendors who understand this transfer of power and choose to capitalize on it by organizing virtual communities will be richly rewarded with both peerless customer loyalty and impressive economic returns."

[10] Figallo, 1998

[11] Hagel and Armstrong, 1997

While interest-based and commercial on-line communities have been growing, there has been less activity to date in the utilization of multimedia assets for building community memory. Building community memory through the utilisation of multimedia assets may be implemented alongside other community building tools and functions in building on-line communities. Community building tools and functions can be implemented in capturing community memory for those reasons listed above. Amy Jo Kim[12] puts forward the following on-line community building tools and functions:

- E-mail Lists
  Moderated, unmoderated and broadcast
- Bulletin Boards
  Threaded and linear
- Chat Rooms
  Text based, graphic, voice and virtual worlds
- Taxonomy and Metaphorical Models
  Categorical, geographical, media (ie. TV channels, etc.)
- Profiles
  System profile, user personal profiles, user public profiles
- Differentiated membership
  Visitor, novice, regular, leader, elder

[12] Kim, 2000

In summary, the process of capturing community memory and implementation of other community building tools and functions could and should co-exist, and are synergistic. Capturing community memory can assist in community building activity, and community building activity can assist in capturing community memory.

Chapter 2

ACQUISITION AND DIGITISATION OF MULTIMEDIA ASSETS

Any multimedia archive has to start somewhere, and the Magee College campus of the University of Ulster was fortunate to possess an existing first-generation archive of photographs, and funding for digitisation. The Magee Photographic Collection consisted of nearly 4,000 photographic negatives of pictures of Derry and the Northwest of Ireland, dating from the 1860s up to about 1970. A unique feature of this collection is the fact that it relates exclusively to the Northwest region of Ireland centred on the city of Derry and encompassing Counties Derry, Donegal, Tyrone and Fermanagh.

The Magee Photographic Collection began after the New University of Ulster set up the Institute of Continuing Education (ICE) in Magee University College, Derry, in 1972. A small photographic studio and film processing unit were included as part of the facilities in the ICE Learning Resources Centre. ICE also inherited the administration of the University's extra-mural programme in which courses in local history were represented. The idea of setting up a central collection of photographs relating to the Northwest seemed to be complimentary. Other contributing factors were:

1. There existed no single centralized index of materials for local historians.
2. A collection with the strength and durability of an institution behind it seemed more likely to survive.
3. As a result of the civil unrest throughout Northern Ireland at the time and consequent redevelopment, great physical changes were taking place in the cities and towns of the region. Photographs only a week old could be suddenly elevated

to the status of historical records and this further underlined the urgency of undertaking the setting up of the collection.[13]

Students on the Magee College Foundation Studies course were responsible for much of the acquisition and cataloguing of the collection.

Before digitisation, the collection was indexed according to a system consisting of a set of index cards colour coded according to subject (Buildings, Events, Personalities, Ephemera, etc.) and number coded for location. In addition to this coded information each entry contains such details as the name of the donor and any copyright restrictions governing the use of the material.

The JIDI Project

Around November 1996 a call went forward to invite institutions to consider inclusion of their digitised images in what was to be known as the Knowledge Gallery Project. At the time, there was considerable interest from commercial organizations including large multinationals like Kodak. In the meantime, the U.K. Joint Information Systems Council approved approximately £350,000 for an initial digitisation and cataloguing programme. The Magee Photographic Collection was submitted for consideration, and was ultimately one of the collections across the U.K. accepted for inclusion in what was to be known as the JISC Image Digitisation Initiative (JIDI)[14]. JIDI partners and collections were:

[13] Mac Gabbann, 1978

[14] http://www.ilrt.bris.ac.uk/jidi/

Art

- The African & Asian Visual Artist Archive - University of East London
- The Lawrence Batley Centre for the National Arts Education Archive (Trust) Bretton Hall
- Art and Design Archive and The Teaching Examples Collection Central St Martins College of Art and Design
- London College of Fashion Collection

Geology

- The British Geological Survey
- Derby Earth Sciences 3D Collection

Social History

- Suffrage Banners Collection, Fawcett Library, London Guildhall University
- The John Johnson Collection of Printed Ephemera, Bodleian Library, Oxford
- The Magee Photographic Collection, Magee College, University of Ulster
- The Spellman Collection of Music Covers

Special Collections

- Gertrude Bell Archive, Robinson Library, University of Newcastle
- The Design Council Archive, University of Brighton
- Design Council Slide Collection (DCSC) at the Manchester Metropolitan University

Gathering Descriptive Information

While most of the images in The Magee Photographic Collection had accompanying descriptive information, some images had none and means of providing descriptive information had to be developed.

A process was developed which involved the Foyle University of the Third Age. The Foyle U3A membership consists of men and women aged 50 years or over from all sections of the local community. Three sessions were scheduled with the

Foyle U3A. A buffet lunch was provided, and members viewed projected images, which had no accompanying descriptive information. Members were invited to volunteer descriptive information, which was transcribed by 2 researchers. This proved to be a very effective means of eliciting information, while also entertaining and bonding members through shared memories. The JIDI project manager attended the final session.

The UMI Controlled Vocabulary of Subject Terms was used to generate consistent keywords for all of the images. Keywords were placed within the descriptive text for each image allowing for matches on free text searches.

Production of Metadata

The JIDI Project established core elements, which were required to accompany each image. These elements drew heavily from the Visual Resources Association (VRA) Core Categories describing visual resources.[15] These elements are collectively referred to as the image metadata. JIDI metadata[16] is divided into three areas:

1. Descriptive metadata
2. Administrative metadata
3. Structural metadata

The metadata was organised into 3 SQL tables named master, photographer and donors. The following list gives the Magee Photographic Collection metadata field names, and how they mapped onto the corresponding JIDI metadata field names.

[15] http://www.oberlin.edu/~art/vra/vra.html

[16] http://www.ilrt.bris.ac.uk/jidi/metadata.html

Master

	MPC field	JIDI field
1	Image Number	Visual Document ID
2	Image Date	Work Date
3	View Description	Work Description
		Work Subject
4	Donor ID	
5	Photographer ID	
6	Image Type	Visual Document Type
7	Image Format	Visual Document Format
8	Owner	Visual Document Owner
9	Collections	Visual Document Relationships
		Work Repository Name
10	Image Source	Visual Document Source
11	X Dimension	Visual Document X-Dimension
12	Y Dimension	Visual Document Y-Dimension
13	Dimension Units	Visual Document Dimension Units
14	Copyright Owner	Visual Document Copyright Owner
15	Copyright Status	Visual Document Copyright Status
16	Filename	Visual Document Filename
17	File Size	Visual Document File Size
18	Bit Depth	Visual Document Bit Depth
19	Colour Space	Visual Document Colour Space
20	Compression	Visual Document Compression Type
21	Capture Device	Visual Document Capture Device
22	Creator	Visual Document Creator
23	Resolution	Visual Document Scan Resolution
24	Digitisation Date	Visual Document Date

photographer

	MPC field	JIDI field
1	Photographer ID	
2	Photographer Name	Work Creator
3	Photographer Address	

donors

	MPC field	JIDI field
1	Donor ID	
2	Donor name	
3	Donor Address	

Digitising Multimedia Assets

Digitisation and networking technologies afford the following advantages in building community memory:

- Digitisation of existing materials allows them to be stored, accessed, searched, indexed, reproduced and retrieved easily and cost effectively.
- Placing materials on-line can remove access barriers caused by requirements of geographical proximity, restrictive opening times, physical problems of simultaneous multiple accesses and scalability as collections grow.
- As digitisation and networking hardware and software becomes cheaper and more pervasive, increasingly specialised areas of preservation become feasible. More people may also become directly involved in the preservation activity.

- Networking allows a high degree of interactivity with immediate response.

While the Magee Photographic Collection contains materials of differing formats, the majority of the images were in 35-mm negative strips. A Nikon Super Coolscan 2000 was purchased. The scanner had the ability to scan the 35-mm negative strips in batches and had an optimum scan resolution of 2,700 dots per inch. This resolution exceeded the specification required by the JIDI Project. Approximately 3,700 images were initially scanned. The JIDI Quality Assurance Officer who received images on CD conducted independent quality assurance. Apart from the high-resolution digital images, reduced resolution copies were also made for each image. The reduced resolution images have been used for the Magee Community Collection after being imprinted with the University of Ulster logo to discourage unauthorised duplication. The freely available and powerful ImageMagick[17] software was used to "watermark" the digitised images to be displayed, merging each image with an image of the University of Ulster logo.

[17] http://www.wizards.dupont.com/cristy/ImageMagick.html

Chapter 3

DESIGN OF THE MAGEE COMMUNITY COLLECTION – ITERATION 1

One of the earliest decisions made with regard to the project development environment was that in as far as possible, the software used should be "open source" and freely available on-line. This is in keeping with the dual goals of easy replication and transfer.

Figure 1

Introductory screen for Magee Community Collection – Iteration 1. Users are welcomed and a side panel of button links for the topics Home, Background, Browse and Research is presented.

The server operating system chosen was Linux, an open source, popular, robust, UNIX-like operating system. The initial database management system chosen was Hughes technologies mSQL[18]. This was later switched to T.c.X's MySQL[19] because of the more active development community, and the existence of a freely available web-based administration package called phpMyAdmin[20].

Figure 2

One of the "Background" documents. This particular document provides background information on the JIDI Project.

Both of these database management systems interface with PHP3[21] which was chosen as the scripting language to provide web-based interactive database access. PHP version 3 is an HTML-embedded scripting language whose syntax borrows from C, Java and Perl.

[18] http://www.hughes.com.au

[19] http://www.mysql.com

[20] http://www.phpwizard.net/projects/phpMyAdmin/index.html

[21] http://www.php.net

The web server environment chosen was Apache[22]. The Apache web server is open source, and has a module that supports PHP pre-processing.

Figure 3

The introductory screen for browsing images. In this iteration, there are two options – browsing through all of the images sequentially, or selecting images to browse by searching on descriptive information.

On-line image management systems which were viewed, like the Visual Arts Data Service[23] and the Higher Education Library Image Exchange[24], informed this first-pass design and implementation regarding both desirable, and undesirable features.

NetObjects Fusion[25] version 5.0 was used for building the site and documents were developed using guidelines outlined in an internal University of Ulster document[26].

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[22] http://www.apache.org

[23] http://vads.ahds.ac.uk/index.html

[24] http://www.helix.dmu.ac.uk/

[25] http://www.netobjects.com/

[26] http://www.infm.ulst.ac.uk/~ted/html/guidelines.htm

Community Feedback on Iteration 1

In iteration 1 of the Magee Community Collection, two interactive forms were provided. One for requesting high-resolution versions of the images, and the other for suggested amendments and/or corrections to images descriptive information.

Figure 4

When the link for requesting a high-resolution image or adding/correcting descriptive information is selected, interactive CGI forms are displayed which forward the supplied information to the appropriate person via e-mail.

Responses were received via both forms. It was observed that those who contributed corrections often contributed multiple corrections. This suggested that a relatively few motivated contributors could make a significant impact on the collection. It was also observed that contributions dropped in frequency over time elapsed since the initial site launch and publicity. This seemed to reinforce the need for continuous activity and change articulated by other on-line community developers. An e-mail list of contributors was established to keep contributors informed about new or pending developments.

A sampling of actual requests for amendments and/or corrections is reproduced in Appendix A. The original network addresses, network names, names and e-mail addresses have been removed to protect anonymity.

Requests for high-resolution versions of images were e-mailed directly to the administrator of the Magee Photographic Archive who reported 30 separate requests for images.

Figure 5

In this iteration the searchable fields are image description, image number, image date, owner, collection(s), copyright owner and copyright status.

Figure 6

An example of searching by description. Through search criteria, the number of images has been narrowed to 52 that match the search criteria. Thumbnail images with image numbers serve as links to larger images. Descriptions are provided for each image, with navigational links at the bottom of the document.

Figure 7

An example of the larger image displayed when the linked thumbnail image is selected. image date, image number, image description and a link to further information are displayed.

Figure 8

This screen shows the document displayed when the link for further information is selected. Most of the fields from the database tables are displayed along with links for requesting a full resolution image, and adding or correcting descriptive information.

Chapter 4

ANALYSIS OF MAGEE COMMUNITY COLLECTION – ITERATION 1 DESIGN

Functional Review of E-Commerce Sites

In surveying the body of documents available on-line on the development of on-line communities, there seems to have been a distinct shift in activity from a community/societal perspective to a commercial perspective. This shift seemed to occur around 1996/7. Also from this period many Internet (or "dot com") companies were highly valued based almost exclusively on the number of users or community members they could attract. As a result, the large e-commerce and portal web sites have been the most effective in attracting visitors and developing on-line communities. Some of these sites are very comprehensive in the functions that they provide which draw users/members back again and again. Two of these successful sites are examined here to see if the functions they provide might be usefully employed in building community memory.

Functional Notation

A method was required to quickly obtain and document the functional structure of on-line (primarily WWW) sites. A simple shorthand notation was developed for this purpose, and is used throughout this document. In several respects, it is akin to pseudocode. Pseudocode has been used from the 1970s to the present day as an informal notation that combines the structure of a programming language in a natural-language description not intended for compilation.

On-line sites usually have a tree-like structure with some documents functioning as nodes or branches. Links within the tree transport the user to other documents (which can be nodes). The developed notation starts at the root document to be examined (often the “homepage”) and describes the information and links by the function that they provide. On web sites, specific functions are often associated with a particular document, which usually has a unique address (URL) and a corresponding place in the document tree. In this way functionality often influences the structure of the document tree. Functions provided via a document are listed below and indented one tab place to denote ownership. This type of functional indentation is common in the production of readable software. Subsequent documents are evaluated in the same way until the requisite scope is reached.

The first iteration of the Magee Community Collection focused primarily on interactive access to the Magee Photographic Collection. The functional structure of the web pages was as follows:

- Home page
  - Background information
    - Magee Photographic Collection background
    - JIDI Project background
    - Credits
  - Browse
    - Browse images
      - Browse images sequentially
        - Display thumbnails with image number and description
        - Display position in collection
        - Navigational links (home, backward, forward, new browse)
        - Link to larger image
          - Display larger image
          - Image number, date and description
          - Link to further image information
            - Image number, photographer name, photographer address, donor name, donor address, owner, copyright owner, copyright status, original source, collections, type, format, image width, image height, unit of measurement, file name, file size, bit depth, colour space, compression, capture device, creator, resolution, digitisation date
          - Link to request for full resolution image
            - User information
            - Send request
              - Confirmation
          - Add or correct descriptive information
            - Image information
            - Send information
              - Confirmation
        - Browse images by searching descriptive information
          - Choose field to search
          - Search text
          - Begin search
            - Display thumbnails with image number and description
            - Display position in collection
            - Navigational links (home, backward, forward, new browse)
          - Link to larger image
            - Display larger image
            - Image number, date and description
            - Link to further image information
              - Image number, photographer name, photographer address, donor name, donor address, owner, copyright owner, copyright status, original source, collections, type, format,

image width, image height, unit of measurement, file name, file size, bit depth, colour space, compression, capture device, creator, resolution, digitisation date
Link to request for full resolution image
    User information
    Send request
        Confirmation
Add or correct descriptive information
    Image information
    Send information
        Confirmation

Amazon.com

Currently, the largest retail outlet on the Internet is Amazon.com, which was founded as recently as 1995 by Jeff Bezos. At the time of writing, Bezo's shares alone are worth 10.5 billion dollars, and he was Time magazine's "Person of the Year" for 1999[27]. Amazon.com initially sold books, but since has supplemented this by the sale of other products. Amazon.com has also established sub-sites for individuals to sell their own products for either a fixed price (zShops), or through auctions.

Review of Amazon.com Functions

Search engine
    Search by products
Browse products by category
    Subject/classification index
        Further subject/classification index
    Featured products
Product page
    Product information
        List price
        Discount
        Net price
        Availability

[27] Quittner, 1999

- Sales ranking
- Reviews
- Similar products
- Information on other products purchased by previous purchasers
- Review submission tools

Shopping cart
- Product being purchased with quantities and prices
- Checkout
  - Customer authentication
  - Shipping and billing address selection
  - Cost and order confirmation

Shopping services
- Customer wish list (akin to wedding registries)
- Buy or redeem gift certificates
- Receive e-mail recommendations by category

Special features
- Friend referral
- Purchase circles (what customers groups are buying by organization or geographical area
- Community
  - Member personal pages
  - Bulletin boards
  - Customer wish list maintenance
  - E-cards
- Wireless and PDA access
- Charitable contributions

Mirror and/or collaborative sites
Featured items
On-line help
Account information and maintenance
Site guide
"1-Click" settings
Privacy policy
Job listings
ZShops
Auctions

Ebay

Ebay began life in 1995 as AuctionWeb, and was created by Pierre Omidyar. Ebay uses on-line tools to bring together buyers and sellers in the auctioning of various items. At the time of writing Ebay currently:

- Has 7.7 million registered users
- Has more than 2,900 established categories of goods
- Hosts more than 2.5 million auctions with more than 350,000 new items going on sale every day
- Has listed more than 126 million auctions[28]

Review of Ebay Functions

Items of interest by category
Search engine
Browse items by associated images
Site map
Browse items by geographical region
Featured items
New user information and frequently asked questions
Special offers and featured items
Announcements
Customer support
Mirror and/or collaborative sites
Browse items by category
Browse featured items
Start an auction
Auction
    Auction information including:
        Start time
        End time
        Time left
        Quantity
        Seller
        Bid history
        Item description and photos
        Payment and shipping information
    Automated bidding system
Services (tools for accomplishing specific tasks)
    Register as a user
    Change auction information
    Insurance, escrow and investigations
    View or contribute to buyer and seller ratings
    My Ebay (personalized tools for user account information)
        Recent ratings received and given

[28] Ferguson, 1999

Personal auctions underway
Personal bidding underway
Auction watching (closely following activity without bidding)
Personal account status and functions for account maintenance
Favourite categories

Search facilities
Search by item title
Search by item number
Search by seller
Search by bidder
Search completed auctions
Search internationally

On-line help
Glossary
Questions and Answers
Seller guide
Buyer guide
Community rules and regulations

Community information
Announcements
Bulletin boards

Ebay corporate information
Press releases
Investor relations
Job listings

Evaluation of Functional Reviews and Proposed Improvements

The purpose of the Amazon.com and Ebay functional reviews was to identify any functions from these highly successful sites that might be appropriate for the Magee Community Collection. The following functions were identified:

- User profiles
- Expanded search engine capability
- Keyword/subject index
- Bulletin boards
- Links to collaborative sites

- On-line help and FAQs
- Site guide
- Browse assets by geographical region
- Asset rating (most viewed, voted best, etc.)

In addition to these functions, it was determined from evaluating other developmental community archive work that a means of managing archival materials submitted on-line would be desirable.

Chapter 5

MAGEE COMMUNITY COLLECTION – ITERATION 2

Since the implementation of the Magee Community Collection – Iteration 1, several updates were made available in the underlying software. The MySQL database engine was updated to version 3.22.32, PHP was upgraded to version 4.0.1 and the Apache server was upgraded to version 1.3.12. It was also found that the Mandrake[29] distribution of Linux installs MySQL, PHP, Apache and ImageMagick as a default configuration when the "server" installation option is chosen.

Figure 9

Introductory screen for Magee Community Collection – Iteration 2. New side panel of button links for the topics Home, Browse, MCC Forums, Links and Help & Information. A button is also included below for the site map. More use is made of colour than in the previous iteration.

[29] http://www.linux-mandrake.com/en/

Implementation of Desirable Functions

Because of the timescale of the project, not all of the functions identified as desirable within the timescale of this project could be implemented in this iteration. Implementation details were as follows:

- **User profiles**

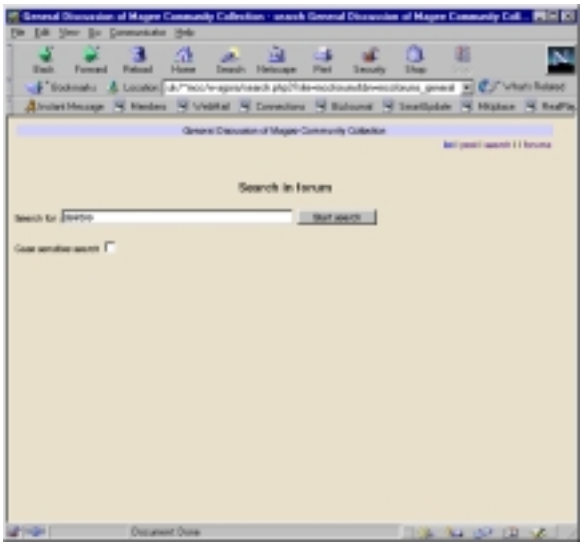
  Not implemented.

- **Expanded search engine capability**

  A forum search capability was implemented in this iteration, but no additional fields were added to the image search capability. It is intended that users be able to search on photographer name, photographer address, donor name and donor address. This would involve multiple database tables, and there was not sufficient time to implement the feature in this iteration.

Figure 10

Example screen of the bulletin board/forum search facility.

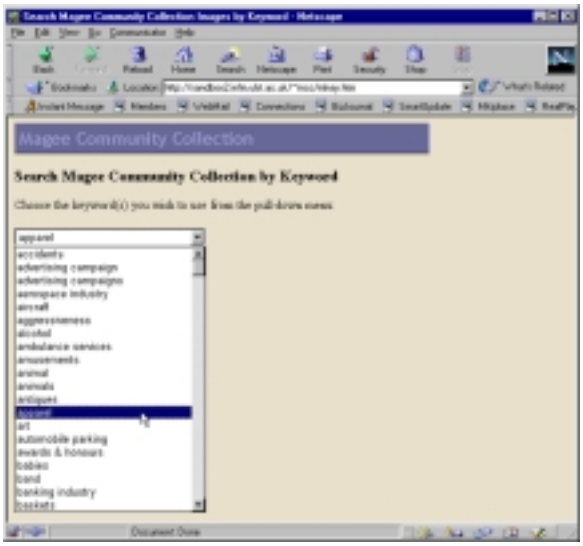


- **Keyword / subject index**

  distilling all of the keywords in the database created a keyword index. These words would originally have been taken from, and should be a subset of, the controlled vocabulary. Keyword selection was enabled through a CGI form that offered a pull-down menu of keywords.

Figure 11

With this iteration, a search by keyword option was added using an HTML form with a pull-down menu linked to an existing PHP script.



- **Bulletin boards**

  Creating an entirely new bulletin board system in the time available was not practical, especially since so many systems already existed and were freely available. Some of these systems also included user profiling which had also been identified as a desirable function. In choosing a system to integrate many factors were considered, including the underlying design principles that the software used should be open source, freely available on-line, easy to replicate and transfer. Given these factors, along with the fact that MySQL and

PHP were being used already in the implementation, the W-Agora[30] bulletin board system was chosen for integration. W-Agora is written in PHP and is distributed under an "artistic license," giving full access to the source code. Users are free to make additions, bug fixes, and alterations. Multiple database engine support is available, including support for MySQL.

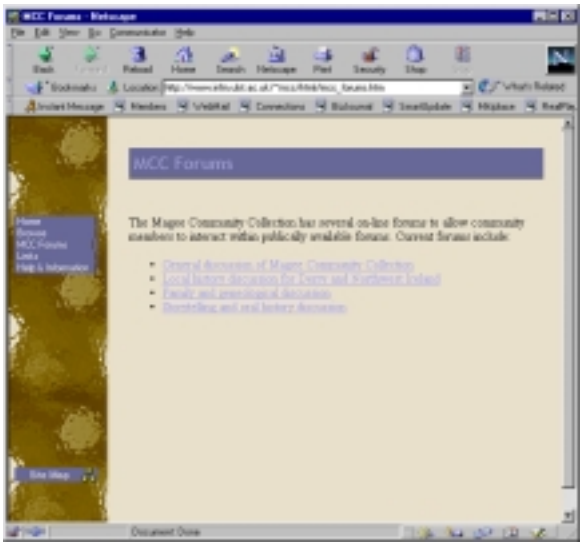


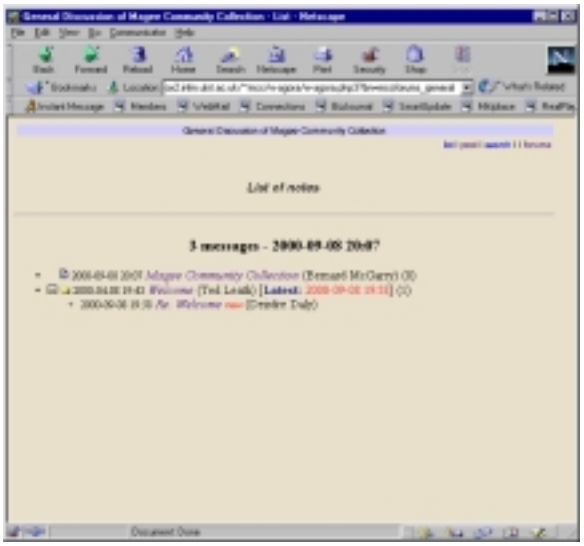
Figure 12

An existing bulletin board/forum system was integrated into the iteration. The system is implemented using PHP along with MySQL. This screen shows the four available forums.

[30] http://w-agora.araxe.fr/

Figure 13

List of notes or messages in the General discussion of Magee Community Collection forum.



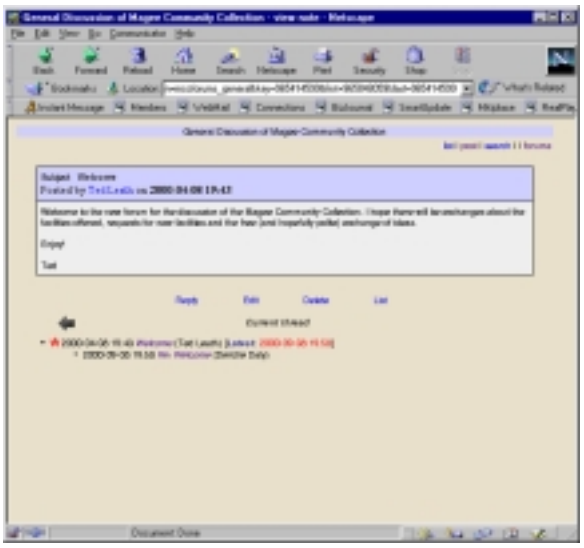


Figure 14

Example of a forum message with links to reply, edit, delete, list, post, search and other forums.

- **Links to collaborative sites**

  Establishing links to other collaborative sites was accomplished through a simple HTML page with hypertextual links.

- **On-line help and FAQs**

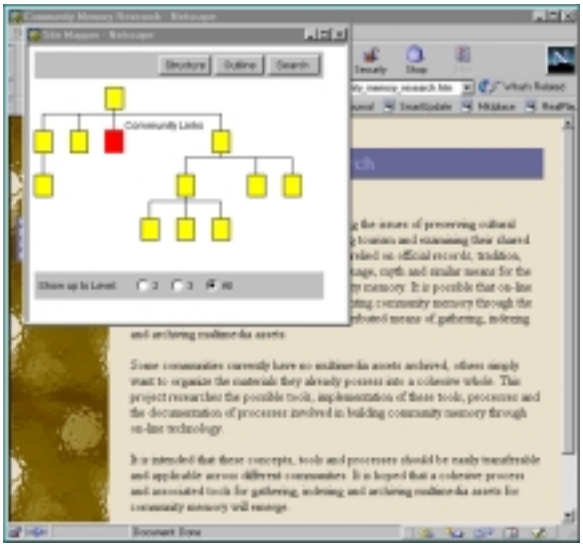
  The document tree was restructured to include a node for help and information, and the appropriate pages were placed beneath this node. An HTML page for frequently asked questions was also created.

- **Site guide**

  A site guide was placed on the initial page, and all subsequent pages that displayed the top-level menu choices. This was implemented using a Java program that provided a graphical representation, textual representation and page name search facilities for the site.

Figure 15

An example of the Java site map. The graphical representation of the site is shown here. The entire site may be navigated from this view, with each node a direct link to the document represented.



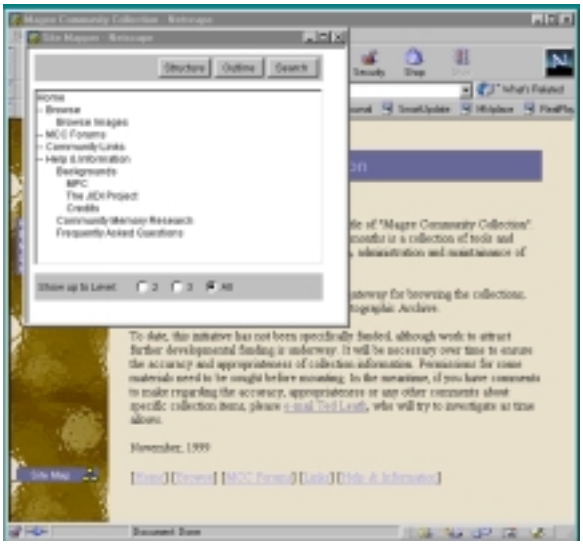


Figure 16

A further example of the Java site map. The option shown here is a textual outline of the site. Once again, the entire site may be navigated from this view, with each line of text a direct link to the document represented.

- **Browse assets by geographical region**

  Not implemented.

- **Asset rating (most viewed, voted best, etc.)**

  Not implemented.

- **On-line materials submission**

  Not implemented.

Chapter 5

CONCLUSIONS AND OBSERVATIONS

Conclusions and observations have been organised under the following headings:

- Functional Notation
- Systems Integration versus Software Creation
- Implementation and Replication
- The Value of Iterative Development and Stepwise Refinement
- Information Elicitation
- Hardware and Software Review
- Ease of Implementation and Revision
- Community Memory and Community Building Complimentarity

Functional Notation

The informal notation developed to assess the functional structure of on-line sites proved to be powerful and easy to use. This has a very wide application area and merits further research.

Systems Integration versus Software Creation

For the degree of functionality available in each iteration of the Magee Community Collection, surprisingly little original software was required. In taking

a systems integration approach, a high degree of functionality was provided with a relatively modest investment of time – given the availability of a systems integrator with the appropriate skills level.

Implementation and Replication

Each iteration of the Magee Community Collection has been very easy to replicate. To create an instance of another community on the same server host, files are copied to a new directory, databases created using existing SQL scripts, appropriate permissions granted and HTML text changed to reflect the identity of the new community. It is estimated that this would take approximately 3 to 5 hours for an experienced systems integrator to accomplish. To establish the new community on another server host, it is estimated that software installation and appropriate changes would take approximately 8 to 10 hours.

The Value of Iterative Development and Stepwise Refinement

Software developers frequently use these methods when developing applications software. Using iterative development and stepwise refinement combined with a systems integration approach allowed:

- Rapid development and availability of the initial iteration.
- Each iteration to be complete and usable with regard to the functions made available through the specific iteration.
- The overall system to be inherently modular.
- Easy implementation of new software versions and features.
- User feedback to be incorporated in further iterations.

On the subject of community-centred development Jenny Preece writes:

> "…community-centered development involves continuous iterative develop-and-test cycles." [31]

This has certainly been evident in this project.

Information Elicitation

The three sessions that were hosted for information elicitation with the Foyle U3A were very successful. Informal feedback from participants was positive and indicated that the process itself was an enjoyable and beneficial experience. In the future, this type of approach could also be tried in places like geriatric homes with a view to a possible complimentary therapeutic effect.

Hardware and Software Review

At the end of iteration 2, the Magee Community Collection used the following hardware and software:

- The server had a 200 MHz Pentium Pro processor and 128 MB of memory.
- The operating system was Linux, Mandrake 7.0 distribution. Choosing the "server" option with this distribution defaults to automatically installing MySQL, PHP, Apache and Imagemagick.
- MySQL was used as the SQL database engine, and was administered using PHP scripts collectively known as phpMyAdmin.

[31] Preece, 2000

- PHP scripts were used to interact with the database. PHP contained MySQL and Apache extensions on installation.
- The Apache web server software contained PHP extensions on installation. The web server provided the interface to user's browsers.
- Bulletin board/forum functionality was provided using PHP scripts collectively known as W-Agora.
- ImageMagick was used to incorporate image watermarks.
- The Magee Community Collection could be accessed through Netscape or Microsoft browser's versions 4 and upward. Older browsers could use the site with the exception of the Java site map.

Ease of Implementation and Revision

While software installation, configuration and revision of the software used was not time consuming, an experienced systems administrator/integrator was required. If required, these processes could be automated using an appropriate software management system like the Red Hat Package Manager[32] for Linux.

Community Memory and Community Building

Community archives can and should be incorporated as an element of on-line community development. Likewise, established on-line community development techniques should be employed to attract and sustain the interest of users who might contribute to the archive. This area is also worthy of further research.

[32] http://www.rpm.org/

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The Visual Arts Data Service. http://vads.ahds.ac.uk/index.html

The Higher Education Library Image Exchange. http://www.helix.dmu.ac.uk/

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APPENDIX A: SAMPLE FEEDBACK

Corrections have been requested from at XXX.XXX.XXX.XXX with the following message:
Ted
Would this image C 515 be of John A. Hawthorn\'s building at No.52 John Street.
Requestors email address is: (Respondent A)

Corrections have been requested from at XXX.XXX.XXX.XXX with the following message:

Ted
The photo C 148 tif is of Jones and Lowthers laundry in Bishop Street, location boundries,Bishop St./Corporation St./Barrack St.
Enterprise House was in the factory in Great Jame\'s St./Little James St.

Requestors email address is: (Respondent A)

Corrections have been requested from at XXX.XXX.XXX.XXX with the following message:

Ted, B 577 is not Dungannon Market Place, it is the same photo as B 575 which is Guildhall Place, Derry. It is actually one half of B575.

Requestors email address is: (Respondent A)

Corrections have been requested from at XXX.XXX.XXX.XXX with the following message:

Ted, image c606tif (songsters in 1925)
This is the Salvation Army band and singers who used that site (in front of the present Granada TV shop)every Sunday for decades for afternoon worship.

Requestors email address is: (Respondent A)

Corrections have been requested from at XXX.XXX.XXX.XXX with the following message:

Ted, image c605 is of the Salvation Band and members marching probably from the
Salvation Citadel down Bishop St. towards the Diamond. On the right side of the marchers is a WW2 air raid shelter which dates the photo in the 1940s.

Requestors email address is: (Respondent A)

Corrections have been requested from (ip name) at XXX.XXX.XXX.XXX with the following message:

C984
The location of this picture seems to be the interior of St Augustins Church of Ireland Church Londonderry.
(name) , please do not attribute my name to this information.

Requestors email address is: (Respondent B)

Corrections have been requested from (ip name) at XXX.XXX.XXX.XXX with the following message:

D596
I wish to add that two firefighters from Northland Fire Station in the City lost their lives fighting this particular fire.
My name is (name), please do not attribute my name to this information.

Requestors email address is: (Respondent B)

Corrections have been requested from (ip name) XXX.XXX.XXX.XXX with the following message:

D126
Church of Ireland not Catholic

Requestors email address is: (Respondent C)

Corrections have been requested from (ip name) XXX.XXX.XXX.XXX with the following message:

D122
When this photo was taken it was called Superfare, only in recent years has it been known as Frank Long\'s

Requestors email address is: (Respondent C)

Ted

I have been browsing the Magee Collection and have thoroughly enjoyed what I have seen so far (mainly city walls and railways). I am looking forward to the rest.

I hope you don't mind me adding some information and suggesting some typographical corrections on the Railways section.

(Respondent D)

A 314 - This appears to be the Crolly accident of 7 February 1923.
A 374 - Spelling of 'Anthony'.
B 302 - The correct name for the locomotive is 'J T Mackey'.
B 314 - Locomotive No 5 was a 4-8-4T, (not a 4-8-2T).
B 319 - Spelling of 'Bridgend'.
B 323 - This was a Ballast Train (stone ballast in the wagons) assisting track repairs.
B 326 - 1. Spelling of 'Kilmacrenan'. =20
B 326 - 2. Does JNCT imply 'Junction'? Kilmacrenan was not a junction. The diverging track is a siding.
B 333 - Spelling of 'Berkhampstead' in the acknowledgement.
B 490 - Spelling of 'Donegal'

Corrections have been requested from (ip name) at XXX.XXX.XXX.XXX with the following message:

Ted
B161 is pre-Embassy Building time which would make this photo c.1952. If you
can find out when the Embassy dance Hall was opened then you have a closer date.

Requestors email address is: (Respondent A)

Hello Ted,
I am interested in obtaining a print of b153, Watson's pub/grocery, in the community archive. JJ Watson was my grandfather. After selling the pub he had a farm at Duhhugh, Newbuildings
Thanks

(Respondent E)

Corrections have been requested from (ip name) XXX.XXX.XXX.XXX
with the following message:

A741 Ardowen Hotel - not Ardmore Hotel

Requestors email address is: (Respondent C)

APPENDIX B: PHP SCRIPTS FOR MAGEE COMMUNITY COLLECTION – ITERATION 1

mfirst.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# This page is passed 1 variable called imgno which #
# indicates the image number of the image to be     #
# displayed with it's accompanying information      #
#                                                       #
# Ted Leath 11/99 ta.leath@ulst.ac.uk               #
#########################################################

$db    =    mysql_connect("sandbox.infm.ulst.ac.uk","guest",
"guest" );
mysql_select_db("mcc",$db);
$result = mysql_db_query("mcc","SELECT * FROM master WHERE
img_no='$imgno'",$db);
$mrow = mysql_fetch_array($result);
   printf ("<center><table border=1>\n");
   printf ("<tr><td ROWSPAN=\"3\"><center>");
   if   (file_exists("./I400/$imgno.GIF"))   printf   ("<img
SRC=\"./I400/$imgno.GIF\"></center></td>\n");
      else                    printf                  ("<img
SRC=\"./I400/nophoto.GIF\"></center></td>\n");
   printf ("<td><center><b>Image Number</b><br>");
   printf ($mrow["img_no"]);
   printf ("</center></td>\n");
   printf ("<td><center><b>Image Date</b><br>");
   printf ($mrow["img_dt"]);
   printf ("</center></td></tr>\n");
   printf           ("<tr><td           COLSPAN           =
\"2\"><center><b>Description</b><br>");
   printf ($mrow["info"]);
   printf ("</center></td></tr>\n");

   printf    ("<tr><td    COLSPAN    =    \"2\"><center><b><a
href=\"mfurther.php3?imgno=$imgno\">");
   printf                                          ("Further
Information</a></b></center></td></tr>\n");
```

```
   printf ("</table></center>\n");
?>
</body>

</html>
```

mbrowse.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# This page is passed 1 variable called lasti which #
# indicates the place in the database of the last   #
# image browsed. The first time this script is      #
# called, lasti is not passed, and hence is         #
# initialised with the value 0.                     #
#                                                   #
# Ted Leath 11/99 ta.leath@ulst.ac.uk               #
#########################################################

$db                                                    =
mysql_connect("sandbox.infm.ulst.ac.uk","guest","guest");
mysql_select_db("mcc",$db);

# Select all records

$result = mysql_db_query("mcc","select * from master");

# Output image thumbnails 4 at a time with descriptions

$nrows = mysql_num_rows($result);
$i = $lasti;
if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo "<center>Images $firstdisplay through $lastdisplay of
$nrows</center><p>";
}
echo "<center><table border=1>\n";

while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
```

```
   if         (file_exists("./I100/$imgno.GIF"))         echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else                echo                "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table></center>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";
echo     "<center>[<A     HREF=\"index.htm\">Home</A>]     [<a
href=\"browse.php3?lasti=$previ\">Backward</a>] ";
echo "[<a href=\"mbrowse.php3?lasti=$lasti\">Forward</a>] ";
echo        "[<A        HREF=\"./html/browse_images.htm\">New
Browse</A>]</center>\n";

?>
</body>

</html>
```

mbrowse2.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# This page is passed 2 variables called fld and    #
# stext which pass the field and search text for a  #
# database query.                                   #
#                                                   #
# Ted Leath 11/99 ta.leath@ulst.ac.uk               #
#########################################################

$db                                                    =
mysql_connect("sandbox.infm.ulst.ac.uk","guest","guest");

# Select records using search criteria

mysql_select_db("mcc",$db);
```

```
$result = mysql_db_query("mcc","SELECT * FROM master WHERE
$fld LIKE '%$stext%'",$db);
$nrows = mysql_numrows($result);
$i = $lasti;

if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo "<center>Images $firstdisplay through $lastdisplay of
$nrows</center><p>";
}

# Output image thumbnails 4 at a time with descriptions

echo "<center><table border=1>\n";


while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
   if         (file_exists("./I100/$imgno.GIF"))         echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else                echo                "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table></center>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";

echo    "<center>[<A    HREF=\"index.htm\">Home</A>]    [<a
href=\"msbrowse2.php3?lasti=$previ&fld=$fld&stext=$stext\">B
ackward</a>] ";
echo                                                    "[<a
href=\"msbrowse2.php3?lasti=$lasti&fld=$fld&stext=$stext\">F
orward</a>] ";
echo       "[<A       HREF=\"./html/browse_images.htm\">New
Browse</A>]</center>\n";

?>
</body>

</html>
```

mbrowse.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# This page is only called from search.htm. It is   #
# passed variable pairs via HTTP_POST_VARS.         #
# the variables passed contain the field to be      #
# searched, and the text to search on.              #
#                                                   #
# Ted Leath 11/99 ta.leath@ulst.ac.uk               #
#########################################################

$ctr = 1;
while (list($var, $val) = each($HTTP_POST_VARS)) {
   $pairs[$ctr] = $var;
   $pairs[$ctr + 1] = $val;
   $ctr++;$ctr++;
}
$db                                                    =
mysql_connect("sandbox.infm.ulst.ac.uk","guest","guest");

mysql_select_db("mcc",$db);
$fld = $pairs[2];
$stext = $pairs[4];

# Select records using search criteria

$result  =  mysql_db_query("mcc","SELECT  *  FROM  master  WHERE
$fld LIKE '%$stext%'",$db);
$nrows = mysql_numrows($result);
$i = $lasti;

if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo  "<center>Images  $firstdisplay  through  $lastdisplay  of
$nrows</center><p>";
}

# Output image thumbnails 4 at a time with descriptions

echo "<center><table border=1>\n";
```

```
while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
   if        (file_exists("./I100/$imgno.GIF"))        echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else               echo               "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table></center>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";

echo    "<center>[<A    HREF=\"index.htm\">Home</A>]    [<a
href=\"msbrowse2.php3?lasti=$previ&fld=$fld&stext=$stext\">B
ackward</a>] ";
echo                                                    "[<a
href=\"msbrowse2.php3?lasti=$lasti&fld=$fld&stext=$stext\">F
orward</a>] ";
echo       "[<A       HREF=\"./html/browse_images.htm\">New
Browse</A>]</center>\n";

?>
</body>

</html>
```

mbrowse2.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php
#########################################################
# This page is passed 2 variables called fld and    #
# stext which pass the field and search text for a  #
# database query.                                   #
#                                                   #
# Ted Leath 11/99 ta.leath@ulst.ac.uk               #
#########################################################
```

```
$db                                                              =
mysql_connect("sandbox.infm.ulst.ac.uk","guest","guest");

# Select records using search criteria

mysql_select_db("mcc",$db);
$result = mysql_db_query("mcc","SELECT * FROM master WHERE
$fld LIKE '%$stext%'",$db);
$nrows = mysql_numrows($result);
$i = $lasti;

if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo "<center>Images $firstdisplay through $lastdisplay of
$nrows</center><p>";
}

# Output image thumbnails 4 at a time with descriptions

echo "<center><table border=1>\n";


while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
   if         (file_exists("./I100/$imgno.GIF"))         echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else                echo                "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table></center>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";

echo    "<center>[<A    HREF=\"index.htm\">Home</A>]    [<a
href=\"msbrowse2.php3?lasti=$previ&fld=$fld&stext=$stext\">B
ackward</a>] ";
echo                                                        "[<a
href=\"msbrowse2.php3?lasti=$lasti&fld=$fld&stext=$stext\">F
orward</a>] ";
```

```
echo        "[<A        HREF=\"./html/browse_images.htm\">New
Browse</A>]</center>\n";

?>
</body>

</html>
```

mfurther.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# This page is passed 1 variable called imgno which #
# indicates the image number for further database   #
# information.                                          #
#                                                       #
# Ted Leath 11/99 ta.leath@ulst.ac.uk                   #
#########################################################

$db    =    mysql_connect("sandbox.infm.ulst.ac.uk","guest",
"guest" );
mysql_select_db("mcc",$db);

IF  (!($result  =  mysql_db_query("mcc","SELECT  *  FROM  master
m,  donor  d,  photographer  p  WHERE  m.img_no='$imgno'  AND
m.d_id CLIKE d.d_id AND m.p_id CLIKE p.p_id",$db)))
$result = mysql_db_query("mcc","SELECT * FROM master m WHERE
m.img_no='$imgno'",$db);
$mrow = mysql_fetch_array($result);
printf ("<center><table border=1>\n");
printf ("<tr><td><center><b>Image Number</b><br>");
printf ($mrow["img_no"]);
printf ("</center></td>\n");

printf ("<td><center><b>Photgrapher Name</b><br>");
printf ($mrow["p_name"]);
printf ("</center></td>\n");
printf ("<td><center><b>Photographer Address</b><br>");
printf ($mrow["p_address"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Donor Name</b><br>");
printf ($mrow["d_name"]);
printf ("</center></td>\n");
printf ("<td><center><b>Donor Address</b><br>");
printf ($mrow["d_address"]);
printf ("</center></td>\n");
```

```
printf ("<td><center><b>Owner</b><br>");
printf ($mrow["owner"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Copyright Owner</b><br>");
printf ($mrow["c_owner"]);
printf ("</center></td>\n");
printf ("<td><center><b>Copyright Status</b><br>");
printf ($mrow["c_status"]);
printf ("</center></td>\n");
printf ("<td><center><b>Original Source</b><br>");
printf ($mrow["source"]);
printf ("</center></td></tr>\n");
printf                                              ("<tr><td
COLSPAN=\"3\"><center><b>Collections</b><br>");
printf ($mrow["coll"]);
printf ("</center></td></tr>\n");
printf  ("<tr><td  COLSPAN=\"3\"><center><b>Information  on
Full Resolution Image</b>");
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Type</b><br>");
printf ($mrow["type"]);
printf ("</center></td>\n");
printf ("<td><center><b>Format</b><br>");
printf ($mrow["format"]);
printf ("</center></td>\n");
printf ("<td><center><b>Image Width</b><br>");
printf ($mrow["x_dim"]);
printf ("</center></td></tr>\n");
printf ("<td><center><b>Image Height</b><br>");
printf ($mrow["y_dim"]);
printf ("</center></td>\n");
printf ("<td><center><b>Unit of Measurement</b><br>");
printf ($mrow["units"]);
printf ("</center></td>\n");
printf ("<td><center><b>File Name</b><br>");
printf ($mrow["f_name"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>File Size (in bytes)</b><br>");
printf ($mrow["f_size"]);
printf ("</center></td>\n");
printf ("<td><center><b>Bit Depth</b><br>");
printf ($mrow["bit_depth"]);
printf ("</center></td>\n");
printf ("<td><center><b>Colour Space</b><br>");
printf ($mrow["col_sp"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Compression</b><br>");
printf ($mrow["comp"]);
printf ("</center></td>\n");
printf ("<td><center><b>Capture Device</b><br>");
printf ($mrow["cap_dev"]);
printf ("</center></td>\n");
printf ("<td><center><b>Creator</b><br>");
printf ($mrow["creator"]);
printf ("</center></td></tr>\n");
```

```
printf ("<td><center><b>Resolution</b><br>");
printf ($mrow["res"]);
printf ("</center></td>\n");
printf ("<td><center><b>Digitisation Date</b><br>");
printf ($mrow["dig_dt"]);
printf ("</center></td>\n");
printf ("<td><center><a href=\"request.htm\"><b>Request full
resolution image</b></a>");
printf ("</center></td></tr>\n");
printf          ("<tr><td          COLSPAN=\"3\"><center><a
href=\"addinfo.htm\"><b>Add    or    correct    descriptive
information</b></a>");
printf ("</center></td></tr>\n");
printf ("</table></center>\n");

?>
</body>

</html>
```

request.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# Ted Leath 11/99 ta.leath@ulst.ac.uk                   #
#########################################################

$ctr = 1;
while (list($var, $val) = each($HTTP_POST_VARS)) {
   $pairs[$ctr] = $var;
   $pairs[$ctr + 1] = $val;
   $ctr++;$ctr++;
}
mail("g.sloan@ulst.ac.uk","Request  for  Image  from  Magee
Photographic  Archive","Resources  have  been  requested  from
$REMOTE_HOST   at   $REMOTE_ADDR   \nwith   the   following
message:\n\n$pairs[2]\n\nRequestors      email      address
is:\n\n$pairs[4]");
echo "<dl>";
echo  "<dd><b>Your  image  request  has  been  e-mailed  to  the
collection curator</b><p>";
echo "<dd><b>You wrote:</b><p><dd>";
echo $pairs[2];
echo "<p><dd><b>Your e-mail address is:</b><p><dd>";
echo $pairs[4];
```

```
echo "<p><dd><b>Your remote hostname is:</b><p><dd>";
echo $REMOTE_HOST;
echo "<p><dd><b>Your IP address is:</b><p><dd>";
echo $REMOTE_ADDR;
echo "</dl>";
?>
</body>

</html>
```

addinfo.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# Ted Leath 11/99 ta.leath@ulst.ac.uk                   #
#########################################################

$ctr = 1;
while (list($var, $val) = each($HTTP_POST_VARS)) {
   $pairs[$ctr] = $var;
   $pairs[$ctr + 1] = $val;
   $ctr++;$ctr++;
}
mail("ta.leath@ulst.ac.uk","Correction                    for
collections","Corrections    have    been    requested    from
$REMOTE_HOST   at   $REMOTE_ADDR   \nwith   the   following
message:\n\n$pairs[2]\n\nRequestors       email       address
is:\n\n$pairs[4]");
echo "<dl>";
echo  "<dd><b>Your  correction  request  has  been  e-mailed  to
the information maintainer</b><p>";
echo "<dd><b>You wrote:</b><p><dd>";
echo $pairs[2];
echo "<p><dd><b>Your e-mail address is:</b><p><dd>";
echo $pairs[4];
echo "<p><dd><b>Your remote hostname is:</b><p><dd>";
echo $REMOTE_HOST;
echo "<p><dd><b>Your IP address is:</b><p><dd>";
echo $REMOTE_ADDR;
echo "</dl>";
?>
</body>

</html>
```

APPENDIX C: PHP SCRIPTS FOR MAGEE COMMUNITY COLLECTION – ITERATION 2

addinfo.php3

```
<html>

<BODY BGCOLOR="#FFFFFF" LINK="#0000FF" VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# addinfo.php3                                          #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# PHP script to service an HTML form which allows       #
# users to submit database corrections for              #
# consideration. Input is e-mailed to the moderator.#
#########################################################

$ctr = 1;
while (list($var, $val) = each($HTTP_POST_VARS)) {
   $pairs[$ctr] = $var;
   $pairs[$ctr + 1] = $val;
   $ctr++;$ctr++;
}

# e-mail suggested correction with users ip name and ip
address

mail("ta.leath@ulst.ac.uk","Correction for
collections","Corrections have been requested from
$REMOTE_HOST at $REMOTE_ADDR \nwith the following
message:\n\n$pairs[2]\n\nRequestors email address
is:\n\n$pairs[4]");

# echo message sent to the user

echo "<dl>";
echo "<dd><b>Your correction request has been e-mailed to
the information maintainer</b><p>";
echo "<dd><b>You wrote:</b><p><dd>";
echo $pairs[2];
echo "<p><dd><b>Your e-mail address is:</b><p><dd>";
echo $pairs[4];
echo "<p><dd><b>Your remote hostname is:</b><p><dd>";
echo $REMOTE_HOST;
```

```
echo "<p><dd><b>Your IP address is:</b><p><dd>";
echo $REMOTE_ADDR;
echo "</dl>";
?>
</body>

</html>
```

mbrowse.php3

```
<html>

<BODY   BGCOLOR="#E9E1CC"   LINK="#666699"   VLINK="#9999FF"
TEXT="#000000">

<img src="header.gif">

<?php

#########################################################
# mbrowse.php3                                          #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# PHP script which is passed 1 variable called          #
# lasti which indicates the place in the database       #
# of the last image browsed. The first time this        #
# script is called, lasti is not passed, and hence      #
# is initialised with the value 0.                      #
#########################################################

$db                                                     =
mysql_connect("sandbox2.infm.ulst.ac.uk","guest","guest");
mysql_select_db("mcc",$db);

# Select all records

$result = mysql_db_query("mcc","select * from master");

# Output image thumbnails 4 at a time with descriptions

$nrows = mysql_num_rows($result);
$i = $lasti;
if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo  "<p>Images  $firstdisplay  through  $lastdisplay  of
$nrows<p>";
}
echo "<table border=1>\n";

while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
```

```
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
   if        (file_exists("./I100/$imgno.GIF"))        echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else               echo               "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";
echo       "[<A       HREF=\"index.htm\">Home</A>]       [<a
href=\"browse.php3?lasti=$previ\">Backward</a>] ";
echo "[<a href=\"mbrowse.php3?lasti=$lasti\">Forward</a>] ";
echo        "[<A        HREF=\"./html/browse_images.htm\">New
Browse</A>]\n";

?>
</body>

</html>
```

mfirst.php3

```
<html>

<BODY   BGCOLOR="#E9E1CC"   LINK="#666699"   VLINK="#9999FF"
TEXT="#000000">

<img src="header.gif">

<?php
#########################################################
# mfirst.php3                                           #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# This PHP script is passed 1 variable called imgno     #
# which indicates the image number of the image to      #
# be displayed with it's accompanying information.      #
#########################################################
$db    =    mysql_connect("sandbox2.infm.ulst.ac.uk","guest",
"guest" );
mysql_select_db("mcc",$db);

# Select record by image number
```

```
$result = mysql_db_query("mcc","SELECT * FROM master WHERE
img_no='$imgno'",$db);
$mrow = mysql_fetch_array($result);

# Output image in table with image number, image name and
image description

   printf ("<table border=1>\n");
   printf ("<tr><td ROWSPAN=\"3\"><center>");
   if   (file_exists("./I400/$imgno.GIF"))   printf   ("<img
SRC=\"./I400/$imgno.GIF\"></center></td>\n");
      else                    printf                    ("<img
SRC=\"./I400/nophoto.GIF\"></center></td>\n");
   printf ("<td><center><b>Image Number</b><br>");
   printf ($mrow["img_no"]);
   printf ("</center></td>\n");
   printf ("<td><center><b>Image Date</b><br>");
   printf ($mrow["img_dt"]);
   printf ("</center></td></tr>\n");
   printf           ("<tr><td           COLSPAN           =
\"2\"><center><b>Description</b><br>");
   printf ($mrow["info"]);
   printf ("</td></tr>\n");

   printf    ("<tr><td    COLSPAN    =    \"2\"><center><b><a
href=\"mfurther.php3?imgno=$imgno\">");
   printf                                          ("Further
Information</a></b></center></td></tr>\n");
   printf ("</table></center>\n");
?>
</body>

</html>
```

mfurther.php3

```
<html>

<BODY   BGCOLOR="#E9E1CC"   LINK="#666699"   VLINK="#9999FF"
TEXT="#000000">

<img src="header.gif"><p>

<?php
#########################################################
# mfurther.php3                                         #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# This PHP script is passed 1 variable called imgno     #
# which indicates the image number to use in            #
#referencing further database information.              #
#########################################################
$db    =    mysql_connect("sandbox2.infm.ulst.ac.uk","guest",
"guest" );
```

```
mysql_select_db("mcc",$db);

# Select all records from all tables for information

IF (!($result = mysql_db_query("mcc","SELECT * FROM master
m, donor d, photographer p WHERE m.img_no='$imgno' AND
m.d_id LIKE d.d_id AND m.p_id LIKE p.p_id",$db)))
$result = mysql_db_query("mcc","SELECT * FROM master m WHERE
m.img_no='$imgno'",$db);
$mrow = mysql_fetch_array($result);

# Output image information in a table

printf ("<table border=1>\n");
printf ("<tr><td><center><b>Image Number</b><br>");
printf ($mrow["img_no"]);
printf ("</center></td>\n");

printf ("<td><center><b>Photgrapher Name</b><br>");
printf ($mrow["p_name"]);
printf ("</center></td>\n");
printf ("<td><center><b>Photographer Address</b><br>");
printf ($mrow["p_address"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Donor Name</b><br>");
printf ($mrow["d_name"]);
printf ("</center></td>\n");
printf ("<td><center><b>Donor Address</b><br>");
printf ($mrow["d_address"]);
printf ("</center></td>\n");
printf ("<td><center><b>Owner</b><br>");
printf ($mrow["owner"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Copyright Owner</b><br>");
printf ($mrow["c_owner"]);
printf ("</center></td>\n");
printf ("<td><center><b>Copyright Status</b><br>");
printf ($mrow["c_status"]);
printf ("</center></td>\n");
printf ("<td><center><b>Original Source</b><br>");
printf ($mrow["source"]);
printf ("</center></td></tr>\n");
printf                                          ("<tr><td
COLSPAN=\"3\"><center><b>Collections</b><br>");
printf ($mrow["coll"]);
printf ("</center></td></tr>\n");
printf  ("<tr><td  COLSPAN=\"3\"><center><b>Information  on
Full Resolution Image</b>");
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Type</b><br>");
printf ($mrow["type"]);
printf ("</center></td>\n");
printf ("<td><center><b>Format</b><br>");
printf ($mrow["format"]);
printf ("</center></td>\n");
```

```
printf ("<td><center><b>Image Width</b><br>");
printf ($mrow["x_dim"]);
printf ("</center></td></tr>\n");
printf ("<td><center><b>Image Height</b><br>");
printf ($mrow["y_dim"]);
printf ("</center></td>\n");
printf ("<td><center><b>Unit of Measurement</b><br>");
printf ($mrow["units"]);
printf ("</center></td>\n");
printf ("<td><center><b>File Name</b><br>");
printf ($mrow["f_name"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>File Size (in bytes)</b><br>");
printf ($mrow["f_size"]);
printf ("</center></td>\n");
printf ("<td><center><b>Bit Depth</b><br>");
printf ($mrow["bit_depth"]);
printf ("</center></td>\n");
printf ("<td><center><b>Colour Space</b><br>");
printf ($mrow["col_sp"]);
printf ("</center></td></tr>\n");
printf ("<tr><td><center><b>Compression</b><br>");
printf ($mrow["comp"]);
printf ("</center></td>\n");
printf ("<td><center><b>Capture Device</b><br>");
printf ($mrow["cap_dev"]);
printf ("</center></td>\n");
printf ("<td><center><b>Creator</b><br>");
printf ($mrow["creator"]);
printf ("</center></td></tr>\n");
printf ("<td><center><b>Resolution</b><br>");
printf ($mrow["res"]);
printf ("</center></td>\n");
printf ("<td><center><b>Digitisation Date</b><br>");
printf ($mrow["dig_dt"]);
printf ("</center></td>\n");
printf ("<td><center><a href=\"request.htm\"><b>Request full
resolution image</b></a>");
printf ("</center></td></tr>\n");
printf          ("<tr><td          COLSPAN=\"3\"><center><a
href=\"addinfo.htm\"><b>Add    or    correct    descriptive
information</b></a>");
printf ("</center></td></tr>\n");
printf ("</table>\n");

?>
</body>

</html>
```

msbrowse2.php3

```
<html>

<BODY   BGCOLOR="#E9E1CC"   LINK="#666699"   VLINK="#9999FF"
TEXT="#000000">

<img src="header.gif"><p>

<?php
#########################################################
# msbrowse2.php3                                        #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# This page is passed 2 variables called fld and        #
# stext which pass the field and search text for a      #
# database query.                                       #
#########################################################

$db                                                              =
mysql_connect("sandbox2.infm.ulst.ac.uk","guest","guest");

# Select records using search criteria

mysql_select_db("mcc",$db);
$result = mysql_db_query("mcc","SELECT * FROM master WHERE
$fld LIKE '%$stext%'",$db);
$nrows = mysql_numrows($result);
$i = $lasti;

if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo   "Images   $firstdisplay   through   $lastdisplay   of
$nrows<p>";
}

#  Output  image  thumbnail  images  4  at  a  time  with
descriptions

echo "<table border=1>\n";


while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
   if        (file_exists("./I100/$imgno.GIF"))        echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else               echo               "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
```

```
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";

echo       "[<A       HREF=\"index.htm\">Home</A>]       [<a
href=\"msbrowse2.php3?lasti=$previ&fld=$fld&stext=$stext\">B
ackward</a>] ";
echo                                                        "[<a
href=\"msbrowse2.php3?lasti=$lasti&fld=$fld&stext=$stext\">F
orward</a>] ";
echo       "[<A        HREF=\"./html/browse_images.htm\">New
Browse</A>]\n";

?>
</body>

</html>
```

request.php3

```
<html>

<BODY   BGCOLOR="#FFFFFF"   LINK="#0000FF"   VLINK="#800080"
TEXT="#000000">

<center><img src="header.gif"></center><p>

<?php

#########################################################
# request.php3                                          #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# PHP script to service an HTML form which allows       #
# users to submit a request for a high-resolution       #
# version of an image.                                  #
#########################################################

$ctr = 1;
while (list($var, $val) = each($HTTP_POST_VARS)) {
   $pairs[$ctr] = $var;
   $pairs[$ctr + 1] = $val;
   $ctr++;$ctr++;
}
```

```
# e-mail request with users ip name and ip address

mail("g.sloan@ulst.ac.uk","Request for Image from Magee
Photographic Archive","Resources have been requested from
$REMOTE_HOST at $REMOTE_ADDR \nwith the following
message:\n\n$pairs[2]\n\nRequestors email address
is:\n\n$pairs[4]");

# echo message sent to the user

echo "<dl>";
echo "<dd><b>Your image request has been e-mailed to the
collection curator</b><p>";
echo "<dd><b>You wrote:</b><p><dd>";
echo $pairs[2];
echo "<p><dd><b>Your e-mail address is:</b><p><dd>";
echo $pairs[4];
echo "<p><dd><b>Your remote hostname is:</b><p><dd>";
echo $REMOTE_HOST;
echo "<p><dd><b>Your IP address is:</b><p><dd>";
echo $REMOTE_ADDR;
echo "</dl>";
?>
</body>

</html>
```

msbrowse.php3

```
<html>

<BODY BGCOLOR="#E9E1CC" LINK="#666699" VLINK="#9999FF"
TEXT="#000000">

<img src="header.gif"><p>

<?php

#########################################################
# msbrowse.php3                                         #
# Ted Leath 8/00 ta.leath@ulst.ac.uk                    #
# This page is only called from search.htm. It is       #
# passed variable pairs via HTTP_POST_VARS.             #
# the variables passed contain the field to be          #
# searched, and the text to search on.                  #
#########################################################

$ctr = 1;
while (list($var, $val) = each($HTTP_POST_VARS)) {
   $pairs[$ctr] = $var;
   $pairs[$ctr + 1] = $val;
   $ctr++;$ctr++;
```

```
}
$db                                                              =
mysql_connect("sandbox2.infm.ulst.ac.uk","guest","guest");

mysql_select_db("mcc",$db);
$fld = $pairs[2];
$stext = $pairs[4];

# Select records using search criteria

$result = mysql_db_query("mcc","SELECT * FROM master WHERE
$fld LIKE '%$stext%'",$db);
$nrows = mysql_numrows($result);
$i = $lasti;

if ($lasti < $nrows) {
   $firstdisplay = $lasti + 1;
   if  (($firstdisplay  +  3)  <  $nrows)  $lastdisplay  =
$firstdisplay +3;
      else $lastdisplay = $nrows;
echo  "<p>Images  $firstdisplay  through  $lastdisplay  of
$nrows<p>";
}

#  Output  image  thumbnail  images  4  at  a  time  with
descriptions

echo "<table border=1>\n";

while (($i < ($lasti + 4)) and ($i < $nrows)){
   $imgno = mysql_result($result,$i,"img_no");
   echo "<tr><td>";
   echo "<center>";
   echo "<a href=\"mfirst.php3?imgno=$imgno\">";
   if         (file_exists("./I100/$imgno.GIF"))         echo
"$imgno<br><IMG SRC=\"./I100/$imgno.GIF\">";
      else                echo                "$imgno<br><IMG
SRC=\"./I100/nophoto.GIF\">";
   echo "</a>";
   echo "</center>";
   echo "</td>\n";
   echo "<td>";
   echo mysql_result($result,$i,"info");
   echo "</td></tr>\n";
   $i++;
}
echo "</table>\n";
if ($lasti > 4) $previ = $lasti - 4;
   else $previ = 0;
if ($lasti < ($nrows)) $lasti = $i;
echo "<p>";

echo       "[<A       HREF=\"index.htm\">Home</A>]       [<a
href=\"msbrowse2.php3?lasti=$previ&fld=$fld&stext=$stext\">B
ackward</a>] ";
```

```
echo                                                    "[<a
href=\"msbrowse2.php3?lasti=$lasti&fld=$fld&stext=$stext\">F
orward</a>] ";
echo        "[<A        HREF=\"./html/browse_images.htm\">New
Browse</A>]\n";

?>
</body>

</html>
```