Using Cutting-edge Technology for Innovative Global Resource Sharing:
The Cases of Global Memory Net and World Heritage Digital Memory[1]

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ABSTRACT

To extend the traditional concept of using technology to improve inter-lending and resource sharing services, this author will draw upon the experience of her *Global Memory Net (GMNet),* supported by the US National Science Foundation's International Digital Library Program, and the latest activities of the first virtual US World Heritage Digital Center in partnership with the UNESCO's World Heritage Center to articulate as well as demonstrate how cutting-edge technology can be used to empower libraries, museums, and archives to provide innovative global resource sharing services. These will include resource retrieval, sharing and utilization in a way not possible before by:
- Instant provision of multimedia and multi-lingual resources,
- Instant link with the world available resources – both print and digital,
- Instant link with the world available resources – both bibliographic as well as web-based,
- Instant provision of full-text documents and resources if they are digitally available,
- Instant zooming of image resources,
- Many other features.

Clearly in this dynamic digital age, "document delivery and resource sharing" can take on a very different meaning. Technology can help to expand the library's traditional role of inter-lending and resource sharing, and improve the resource sharing and utilization services in a global scale, not limited to resources owned or within reasonable distance. This paper intends to vividly demonstrate this innovative global resource sharing.

INTRODUCTION

In January and February 2007, *A Manifesto for Rethinking Resource Sharing* was affirmed by the ALA/RUSA/STARS Executive Committee (January 2007) and the Rethinking Resource Sharing Steering Committee (February 2007).[2] The *Manifesto* starts with:

If libraries want to expand and promote information accessibility, and to continue to be valued resources, we believe that libraries must improve their information delivery system. Aligning resource sharing workflow, collection policies, and discovery-delivery systems by significantly reducing service barriers and cost, and offering user service options are critical pieces that promote information access.

We believe that the user should be able to get what s/he wants on the terms that s/he chooses without undue hurdles from the library community. As libraries are making their collections visible on a global

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[2] http://www.rethinkingresourcesharing.org/docs/Manifesto.pdf

scale, so should they provide an international resource delivery system or a service model that combines the strengths of all participating libraries."

The *Manifesto* provides seven principles to be embraced by libraries and librarians, so that "the role of libraries in the expanding information environment" can be enhanced. For the purpose of this paper, I shall list only those which are relevant to its deliberation with the "number" unchanged in the following listing:

"3. Global access to sharable resources shall be encouraged through formal and informal networking agreements with the goal towards lowest-barrier-to-fulfillment.

"4. Sharable resources shall include those held in cultural institutions of all sorts: libraries, archives, museums, and the expertise of those employed in such places."

In discussing "Rethinking Resource Sharing," I am aware of Brewster Kahle (2006) of Internet Archive's Open Content Alliance, and his vision of an Open Library[3] which combines the best of the library system and publishing industry to offer to build towards universal access to all knowledge. Currently it is "Book to Book" and the global resources also benefit from the results of the US-China and US-India Million Book projects, for which I had the pleasure working with Raj Reddy as his co-PI of the US-China Million Book Project in the first few years.

In this paper, I would like to speculate the great possibilities of "global resource sharing" of multimedia resources – images, digital videos, sound clips, etc. held in all sorts of cultural institutions: libraries, archives, museums. In this digital age, everything is going multimedia, and it is important to seriously consider multimedia resources available, and see how these resources can be globally shared. Therefore, rethinking resource sharing should address this aggressively. To address this, I shall share our experience gained in *Global Memory Net (GMNet)* and the forthcoming *World Heritage Memory Net*.

GLOBAL MEMORY NET (GMNet)

Global Memory Net (GMNet), a multi-year International Digital Library Project supported by the US National Science Foundation, launched its web site for universal access in July 2006 (http://www.memorynet.org). It includes rich multimedia multi-lingual collections and resources from many countries. Its content collaborators cover all types of organizations and libraries, archives and museums, and even private individuals with unique collections. Although two other papers delivered by this author at *IFLA 2007* are also relevant to participants of this section (Chen, 2007b; Chen, 2007c). They are of different emphases – one on the documentation and preservation of threatened indigenous culture and the other on multi-lingual for government libraries. This paper will focus on how *GMNet* with the help of a cutting-edge integrated Multimedia Content Retrieval System (i-M-C-S) can facilitate the effective global resource sharing by providing fast and easy retrieval and delivery of the distributed multimedia and multi-lingual resources available on the system with a simple click of the mouse.

Sample Multimedia Collections in *GMNet*

GMNet's content collaborators include organizations at many different levels – from international to national institutions, and from libraries to museums, and archives. For example, the collaborators range from the major ones such as UNESCO and Library of Congress' Asian Division, to smaller academic institutions and libraries and museums. The multicultural and multi-lingual collections are many with some samples shown in Figure l. We will mention just a few:

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[3] http://www.openlibrary.org/details/openlibrary

- UNESCO's *Memory of the World*, which includes about 700 images from all projects of the UNESCO's *Memory of the World*, covering sample images of treasured collections from over 100 countries.

- US Library of Congress (LoC) Asian Division's unique collections. These include:

  o *Naxi Collection* – Naxi is one of the 55 minority ethnic groups of China. The collection of 3,342 Naxi manuscripts features ceremonial writings of the Naxi people of Yunnan, China.

  o *Inoh Maps* - This unique collection consists of the LoC's famous "Inoh Maps", discovered in the spring of 2001, are the first modern maps of Japan created originally by Tadataka Inoh between 1800 and 1821.

- *Arab and Islamic Civilization* - An invaluable collection of over 600 images selected from 7 manuscripts in the rare book holdings of the National Library of Egypt.

- *National Libraries* – Information on all the national libraries in the world. Less then half of them have web presence.

Figure 1. Sample digital collections in *GMNet*

- *World Musical Instruments* – A collection consists of several hundred musical instruments mostly from the Far East area at this time, but is intended for global coverage.

- Indigenous groups in the world – At this time, *GMNet* has included the following collections with extensive coverage of specific indigenous groups:

  o *Chinese 56 Ethnic Groups*
  o Chinese Minority – The Li
  o Taiwan Memory
  o Vietnam Museum of Ethnology

- Museum Collections (see Figure 2)

  o Emperor Collection
  o Project Restore
  o Sanxingdui Civilization

- Palaces of Temples

  o Palace – Versailles
  o Palaces & Temples – Cambodia
  o Palaces & Temples – Thailand
  o Museum of Slavonia

Figure 2. Images from museum collections of The First Emperor of China and Project Restore

The list is growing and more content collaborators are coming on board. But, one other specific collection should have specific interest to the topics of "global resource sharing" – *World Digital Collection (WDC). GMNet* has identified 2400 digital collections from over 80 countries with great majority from Western countries, although the number from Asia is growing. These collections cover all subject areas. The selection criteria include dual languages one of which is English, and searchable capabilities. Web pages are not selected for inclusion.

GMNet and Global Resource Sharing

The Goals of GMNet

The goals of *GMNet* can best be summarized in Figure 3 (from *Faculty Showcase 07* at Simmons College):

- Create an online world digital library that serves as a model for integrating multi-format and multi-lingual resources from Museums, archives, libraries and personal resources.

- Offer an online gateway to some of the World's greatest digital collections (*World Digital Collections*).

- Increase access to materials that have been difficult to reach due to distance, form and technical barriers.

- Develop a collaborative infrastructure that can support of contributing partners, a system through which collections continue to grow.

Figure 3. Goals of *GMNet*

- Develop a cutting-edge integrated high-end and innovative system to provide retrieval capabilities for users, including both traditional and content-based retrieval.

- Provide users with a integrated digital library that seamlessly links audio, video, text, and bibliographic resources.
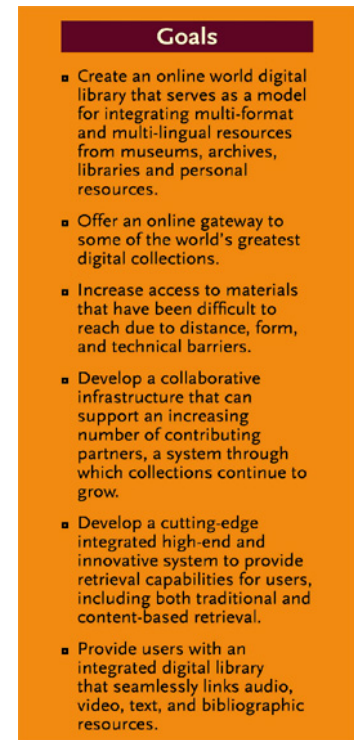
Some Features for Global Resource Sharing

In this section, we will highlight only a few features of the *GMNet*'s i-M-C-S (interactive Multimedia Content Retrieval System) retrieval system capabilities and demonstrate how these can indeed promote innovative global resource sharing. More information on additional system capabilities have already been discussed in Chen (2007a, 2007b, and 2007c), and will not be repeated here again.

We shall present the following features which were not fully explored in other presentations due to space limitations. Since "South Africa" is where our conference is being held, we shall use "South Africa" as a sample "topic" for conducting searches. As already described above, there are many collections in *GMNet*, thus we shall start with the "multi-collection search":

- Multi-collection searches

Since we know what we are looking for, we should type "South Africa" under "Traditional Search,"

and select searches in "any language" and "all fields" of the available metadata. As shown in Figure 4, in addition to 3 images of the National Library of South Africa, it yields instantly 9 websites in World Digital Collection (WDC) and 7 in *UNESCO's Memory or the World*. If one wonders what are the 9 Websites in WDC, by a simple click of the "Browse," instantly the 9 Websites will be displayed, as shown in Figure 5. Of these 9, if one is particular interest, for example, the Website of *Memory of the World – South Africa – The Bleek Collection* (in both new and old interfaces. The old one is in "yellow"), one can immediately pursue further to obtain more information.

- Content-Based Imagine Retrieval

With the information provided in Figure 5, at this point, one can instantly use any of the the three options for more information (Figure 6).

   o **Similar** – If one's interest has now shifted to want to find all similar collections in
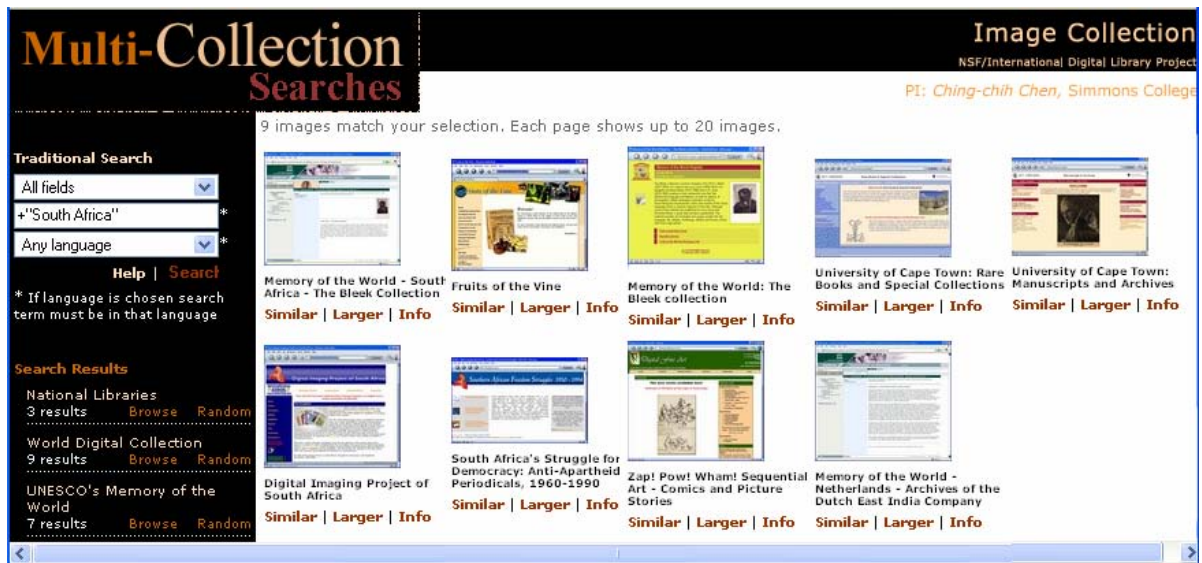
Figure 4. Multi-collection search on "South Africa"

Figure 5. The 9 Websites on "South Africa" are instantly displayed after clicking on "browse" under WDC

UNESCO's *Memory of the World*, regardless whether the collection is related to "South Africa" of not, a simple click on "Similar" without any typing on the keyboard will instantly yield all Websites of *Memory of the World* of similar design with similar color and shape without having to type anything on the search field(s) (Figure 7). This is truly a powerful feature!

   o **Larger** – If one wants a bit more information on the *Bleek Collection* of South Africa and cannot see enough information on

Figure 6. The 3 options

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the little icon, one can enlarge it by clicking on "Larger," and as soon as the screen is larger than the small icon, a "digital water mark" is dynamically generated to protect the intellectual property of the content provider. See the water mark in the lower right corner of the enlarged image (Figure 8).

o **Info** – Once the site is verified to be the desired one, one will want to have more information on it. A click on "Info", descrip-

Figure 7. Once "The Bleek Collection" is selected, click "Similar" to obtain all UNESCO *Memory of the World* sites of similar color and shape

tive information on this site will be provided instantly, and the URL of the site at UNESCO Headquarter in Paris will be there for one to click to (Figure 9).
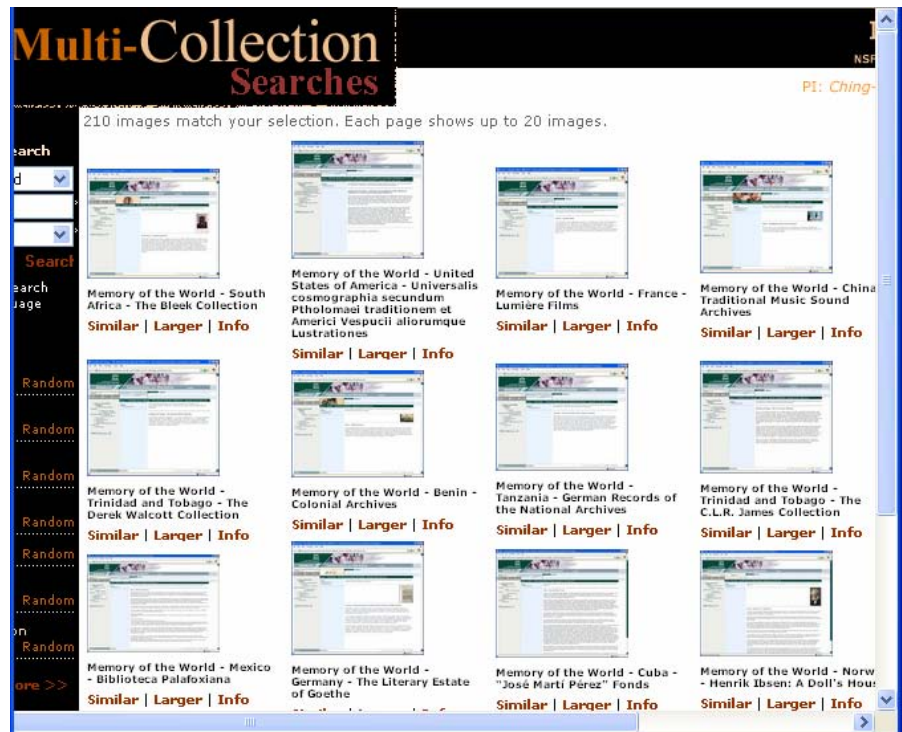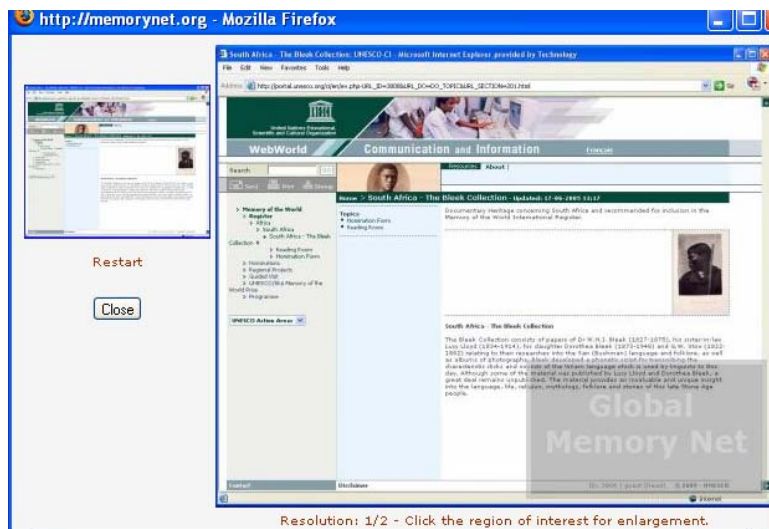
Figure 8. Click "Larger", the icon will be enlarged, and note the digital water mark is dynamically generated in the right lower corner.

Figure 9. Click on "Info", and the descriptive annotation of the image (in this case, the Website) would be given. Note that the source is the URL which directs the user instantly to the UNESCO's Website.

Title:	Memory of the World - South Africa - The Bleek Collection
Creator:	UNESCO
Date:	2005
Location:	Africa, South Africa
Description:	The Bleek Collection consists of papers of Dr W.H.I. Bleek (1827-1875), his sister-in-law Lucy Lloyd (1834-1914), his daughter Dorothea Bleek (1873-1948) and G.W. Stow (1822-1882) relating to their researches into the San (Bushman) language and folklore, as well as albums of photographs. Bleek developed a phonetic script for transcribing the characteristic clicks and sounds of the ½Xam language which is used by linguists to this day. Although some of the material was published by Lucy Lloyd and Dorothea Bleek, a great deal remains unpublished. The material provides an invaluable and unique insight into the language, life, religion, mythology, folklore and stories of this late Stone Age people.
Rights:	UNESCO
Source:	http://portal.unesco.org/ci/en/ev.php-URL_ID=3808&URL_DO=DO_TOPIC&URL_SECTION=201.html
Reference:	Unesco Home -> Memory of the World -> Africe -> South Africa -> The Bleek Collection

- Linked to the world's information resources

Having had a chance to browse the website, and still not satisfied with the limited amount of information obtained, the user will be referred to obtain all the needed information in both print and digital formats. Figure 10 shows some of the multiple world web resources available. For

Figure 10. World information resources including OCLC, Google, etc.

example, if one goes to OCLC, then over 500 million bibliographical records will be available for one to find books on "The Bleek Collection", which are close by to libraries in South Africa or near Durban for inter-lending. Similarly, we will be able to find additional information from Wikepedia, Million Books, or Open Library, as well as all Google digital resources (Figure 10). Furthermore, Figure 11 shows the instant resources found on Google Scholar, Google Image Search, as well as Google Book Search for "The Bleek Collection." So, in *GMNet*, the global resource sharing does not limit to only one type of materials, like Books, or one kind of libraries. It is ALL available resources in multi-format and multi-lingual ways. These global resources are provided at the point of needs only.
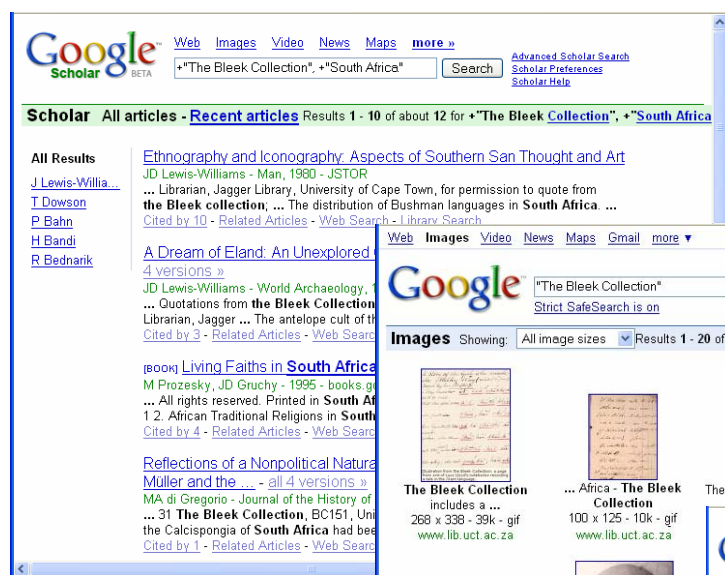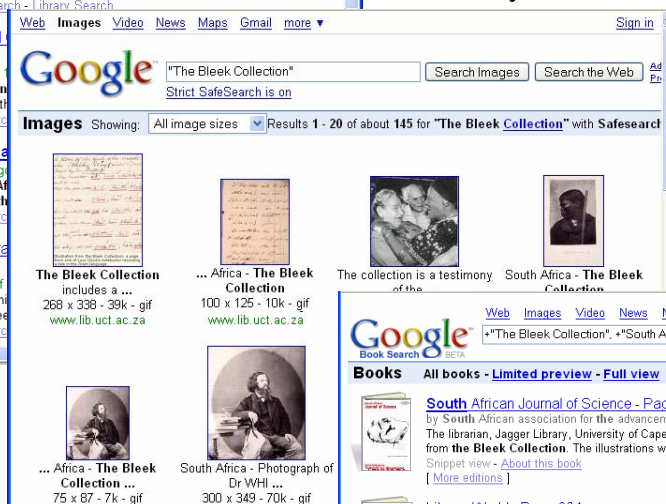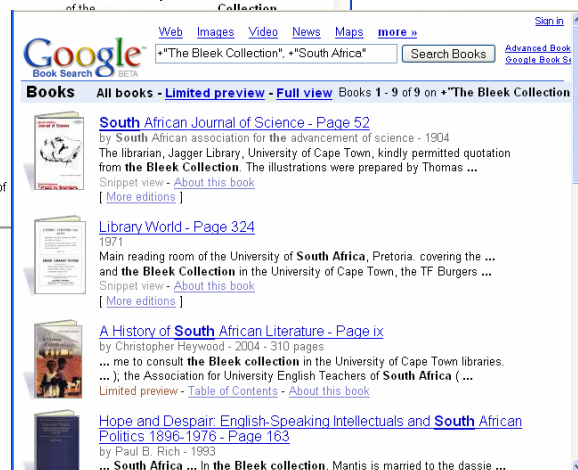

Figure 11. (Above) Searching "The Bleek Collection" in Google Scholar

(Above) Searching "The Bleek Collection" in Google Image Search

(Above) Searching "The Bleek Collection" In Google Book Search

WORLD HERITAGE MEMORY NET (WHMNet)

Another recent exciting development is our partnership with the World Heritage Center (WHC) of UNESCO – the establishment of the first US World Heritage Digital Center, which will use our *Global Memory Net* technology to provide multimedia and multi-lingual information on the 830 world heritage sites of 138 countries. See the announcement made by UNESCO/WHC in both English and French (Chen, 2007c):

- English: http://whc.unesco.org/en/news/326
- French: http://whc.unesco.org/fr/actualites/326/

This is an exciting project with great challenges. But, with invaluable resources on these large number of world heritage sites in 138 countries, they are truly global, and have great potential for resource sharing.

CONCLUSION

There are many other features of the *GMNet*'s i-M-C-S system. However, the above few examples should be sufficient to show the uniqueness of this *GMNet*'s system, and the great potential of this for innovative global resource sharing.

As promoted by the *Manifesto* (ALA/RUSA/STARS, 2007), "every institution must re-evaluate its service model in light of the above seven principles, revise its policies and workflow to meet the global resource sharing and delivery mandate, and expose its resources to more general discovery." I hope that what is described in this paper help us to rethink the resource sharing far beyond the inter-lending and sharing of printed and book resources.

ACKNOWLEDGMENT

REFERENCES

[ALA/RUSA/STARS, 2007] ALA/RUSA/STARS Executive Committee and the Rethinking Resource Sharing Steering Committee. *A Manifesto for Rethinking Resource Sharing*. 2007. http://www.rethinkingresourcesharing.org/docs/Manifesto.pdf

[Chen, 2007a] Chen, Ching-chih, "Challenges for Developing a Global Digital Library and Gateway: From *Global Memory Net* to World Heritage Digital Library," Invited paper presented at the *Digial Library for the Maghred Workshop*, Held in Rabat, Morocco, January 25-27, 2007, organized by the Fulbright Academy of Science and Technology. http://www.fulbrightacademy.org/page/86609/

[Chen, 2007b] Chen, Ching-chih, "The role of art libraries and their partners in documenting and preserving the threatened cultures: The Case of *Global Memory Net* and the World Heritage Digital Library," to be presented at the *IFLA/Art Libraries Section*, August 2007, Durban, South Africa.

[Chen, 2007b] Chen, Ching-chih, "The Delivery of Web-based Multilingual Digital Collections and Services to Multicultural Populations: The Case of *Global Memory Net*," to be presented at the *IFLA/Government Libraries Section*, August 2007, Durban, South Africa.

[Kahle, 2006] Kahle,Brewster. *The Open Library*. CA: Internet Archive, 2006.
http://www.openlibrary.org/details/openlibrary