Chapter 13

Grey Literature Repositories: Tools for NGOs Involved in Public Health Activities in Developing Countries

*June Crowe, Gail Hodge, and Daniel Redmond
Information International Associates Inc., USA*

13.1 Background

Information International Associates, Inc. (IIa), a woman-owned, small business specializing in information management, performs research for government and commercial clients. IIa's Research Division has been involved in over 120 studies in the area of public health in less developed countries and regions. The information needed to complete the studies covers a range of health system topics that include statistics for health personnel, infrastructures, disaster preparedness, health financing, and other factors that impact public health care. In our experience, the search for global public health information can be both complex and frustrating. Although this information is often considered "open source" in many countries, it may be difficult to obtain, especially if governmental web sites are not readily available or completely viable, either not functioning at all or only functioning intermittently. In addition, the health information available from the site may be out of date. Many developing countries experience catastrophic events that impact access to public health information. For example, if a country has experienced political instability, natural disaster, civil strife, or other events, the existing medical system may easily be overwhelmed, with resulting health information being minimal at best.

The information used to complete these studies may also be "open access," which means the information is digital, online, available free of charge, and normally free of most copyright and licensing restrictions. The Budapest Open Access Initiative summarizes "open access" information as a wider degree of access made possible by its free availability on the public Internet, permitting any users to fully disseminate its contents without financial, legal, or technical barriers other than those needed to access the Internet itself as long as the integrity of the au-

thors' works are kept by properly acknowledging them or by using proper citations.¹

Therefore, various resources are consulted for global public health information, including electronic journals, databases, web sites, reference sources, library catalogues, bookstores, newspapers, statistics, electronic books, maps, directories, and grey literature sources. Non-governmental organizations (NGOs) are one of the primary sources of grey literature used for researching healthcare information for developing countries.

In this publication we describe the role of NGOs in global public health information, elaborate on the problem with NGO grey literature, and describe a possible solution based on the repository concept.

13.2 Role of NGOs in Public Health Care

NGOs play an important role in global health activities and health research. It is difficult to quantify the number of such organizations. There are 53,750 development organizations listed in the 2008 edition of the Directory of Development Organizations (DDO). The DDO states that these development organizations facilitate international cooperation and knowledge sharing among civil society organizations, research institutions, governments, and the private sector.² According to the World Health Organization (WHO), 70-95% of health services in emergency situations are delivered by NGOs.³ The work of many NGOs overlaps, making it difficult to discern those that have a primary focus on health. For instance, NGOs with a focus on sustainable development may also be concerned with poverty, education, and health. In Ecuador, for example, Fundacion FEVI is a non-profit NGO which facilitates intercultural education and volunteer community service. FEVI arranges community service visits from people all over the world to small communities in Ecuador. They work with healthcare centers in addition to centers for elderly people, women's organizations, indigenous communities, human rights organizations, and public schools.⁴

NGOs play key roles in health systems of developing countries and are recognized for developing innovative initiatives and programs that address health issues. They possess extensive knowledge of local conditions and can provide baseline data on health infrastructure, personnel, and major obstacles to improvement.

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- 1 Suber, P. (2007), Open Access Overview. Focusing on open access to peer-reviewed research articles and their preprints. <http://www.earlham.edu/~peters/fos/overview.htm>
 - 2 DEVDIR (2008), Directory of Development Organizations Home Page. <http://www.devdir.org>
 - 3 World Health Organization. (2002), WHO and Civil Society Linking for Better Health. <http://www.who.int/civilsociety/documents/en/CSICaseStudyE.pdf>
 - 4 Fundacion FEVI (2008), Fund for Intercultural Education and Community Volunteer Service. <http://www.fevi.org/>

NGOs are often able to reach segments of rural populations that governments neglect or do not target as a priority.⁵

NGOs have roles in public health from the grass roots level to the national and international levels. The WHO has created the following table depicting the health system functions and examples of roles of civil society organizations (CSO)—a type of NGO (table 1).⁶

Table 1

Health System Function	Examples of Roles of CSOs
Health services	Service provision; facilitating community interactions with services; distributing health resources such as condoms, bed nets, or cement for toilets; and building health worker morale and support.
Health promotion and information exchange	Obtaining and disseminating health information; building informed public choice on health; implementing and using health research; helping to shift social attitudes; and mobilizing and organizing for health.
Policy setting	Representing public and community interests in policy; promoting equity and pro-poor policies; negotiating public health standards and approaches; building policy consensus, disseminating policy positions ; and enhancing public support for policies.
Resource mobilization and allocation	Financing health services; raising community preferences in resource allocation; mobilizing and organizing community co-financing of services; promoting pro-poor and equity concerns in resource allocation; and building public accountability and transparency in raising, allocating, and managing resources.
Monitoring quality of care and responsiveness	Monitoring responsiveness and quality of health services; giving voice to marginalized groups , promoting equity; representing patient rights in quality of care issues; and channeling and negotiating patient complaints and claims.

Some of these roles already involve research and information dissemination as indicated by the highlighting of those functions in the table above. Although NGOs promote and advocate for public health, as well as perform other functions in the health systems, there is a need to more effectively include NGOs in the knowledge production and diffusion of public health information in developing countries and to better manage the knowledge output.

5 Partnership with NGOs and Civil Society (2009), International Federation of Agricultural Development. <http://www.ifad.org/ngo/index.htm>

6 Strategic Alliance: The Role of Civil Society in Health (2001), Civil Society Initiative. External Relations and Governing Bodies. World Health Organization. Discussion Paper No. 1 CSI/2001/DP1. http://www.who.int/civilsociety/documents/en/alliances_en.pdf

13.3 NGOs and Grey Literature

Grey literature is defined as "that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers."⁷ NGOs create grey literature in the form of reports, online newsletters, blogs, etc. However, as mentioned above, there is a need to increase involvement of NGOs in the management of their knowledge output. This can be accomplished through dedicated partnerships with appropriate organizations and agencies. These roles could easily be expanded to include more of a role in health research knowledge diffusion because they are "on the ground" and know what is happening firsthand. A researcher having ready access to reports, online newsletters, or blogs generated by NGOs would be extremely valuable.

As a research organization, Ila and its clients need persistent access to documents from all organizations/agencies involved in health activities in developing countries. We found that for a country study completed in 2003, 18% of the urls in the study are now dead links, 3% have changed, 4% have moved or been re-directed, and 29% were no longer existent. Further, the reliability for older studies becomes even more problematic. A quick look at the urls from a study completed in 2000 revealed that only 30% of the urls were active and accessible, about 62% were dead links, and about 8% of the links had been moved or had been re-directed. It is widely recognized that grey literature, while frequently placed on the web only transiently, remains poorly organized and difficult to access.⁸

13.4 Repository Definition

Given the importance of NGO information and the problems mentioned with accessing this information, what could be done to improve the situation? A repository is one possible solution to the problem of locating NGO public health information, particularly reports and studies. What is a repository? A repository is a digital collection that captures and preserves the intellectual output of an institution, agency, or organization. However, it is not only the collection itself; a repository is also the services and technologies - the infrastructure - that make possible the maintenance and dissemination of the digital materials. The development of repositories has principally been undertaken by universities to collect and manage the output of students and faculty; however, they could easily be developed and used by NGOs. University development of digital repositories has been crucial in

7 The New York Academy of Medicine - Library - What is Grey Literature? http://www.nyam.org/library/pages/what_is_grey_literature

8 Liddy, Elizabeth D., Anne M. Turner, and Jana Bradley (2003), Modeling Interventions to Improve Access to Public Health Information. *AMIA ... Annual Symposium proceedings [electronic resource]* 2003: 909.

the lifespan of the technology. As of June 2009, OpenDoar, the Directory of Open Access Repositories, lists 1,407 academic repositories from around the world. One of the largest groups, approximately 7%, has a Health and Medicine subject focus.⁹

13.4.1 Institutional Repository

The focus for an institutional repository is digital collection by capturing and preserving the intellectual output of a single or multi-university community, providing a compelling response to two strategic issues facing academic institutions. This collection provides a critical component of scholarly communication, expanding access to research while maintaining control. Repositories also serve as indicators of a university's quality to demonstrate research activities and serve to increase an institution's visibility, status, and public value.¹⁰ "University-based institutional repositories are a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution." Institutional repositories have also been adopted by government agencies, museums, and corporations and can serve different roles in each environment. While some have argued that the primary role of institutional repositories is open access to research, others have argued that the most important function is to preserve at-risk materials like grey literature.¹¹

13.4.2 Benefits of a Repository

The benefits to researchers of having one or several resources for locating and accessing this grey literature are obvious. Significant time would be saved, and there would be more assurance that the information would be updated and preserved over time. However, there are additional benefits beyond the traditional

9 OpenDOAR (2009), OpenDOAR Chart - Subjects in OpenDOAR - Worldwide. <http://www.opendoar.org/onechart.php?clID=&clID=&rtID=&clID=&IID=&potID=&rSoftWareName=&search=&groupby=cl.clTitle&orderby=cl.clCode&charttype=bar&width=600&caption=Subjects%20in%20OpenDOAR%20-%20Worldwide>

10 Barton (2005), MIT Libraries. Creating an Institutional Repository. <http://www.dspace.org/implement/leadirs.pdf>

11 Sarah L. Shreeves and Melissa H. Cragin (2008), Introduction: Institutional Repositories: Current State and Future. *Library Trends* 57, No. 2: 89-97.

functions, such as data collection, searching, capacity building, knowledge management, as well as unified access.¹²

13.4.3 Data Collection and Coordination

An NGO repository would facilitate the identification of public health problem areas, data collection, and problem solving for decision makers. In addition to making health information about these areas more accessible to researchers and decision makers, use of the repositories could facilitate coordination among NGOs and others who want to provide assistance to these countries. A repository could be useful in identifying NGOs that have had experience in certain areas by preserving a record of the NGOs' work. It would then be easier to discern where resources could best be used.

13.4.4 Building Health Capacity in Developing Countries

Repositories could serve as a mechanism for building health capacity knowledge and diffusion in developing countries. For example, a repository could be the mechanism for introducing new perspectives, or technical expertise, and a way to capture a snapshot of what is happening with disease control, vaccinations, health education, etc. In a recent article on open access archiving, Leslie Chan pointed out that scientific progress is greatly hampered in developing countries by their inability to have access to essential medical literature.¹³ A repository of NGO reports and documents could centralize access to global NGO health-related documents, particularly to those documents from other developing countries that are most relevant for public health, social, and technical situations of a developing country.

13.4.5 Knowledge Management Tool

There are direct benefits to NGOs. Those NGOs that publish many reports and documents would benefit from a repository to support content and knowledge management activities. The management of information about research and projects already conducted can support the re-purposing of that information to enhance development, marketing, and outreach efforts, as well as the creation of future funding proposals. Several years ago Ila helped Conservation International,

12 Bailey, C.W. (2008), Digital Scholarship, Institutional Repositories, Tout de Suite. <http://www.digital-scholarship.org/ts/irtoutsuite.pdf>

13 Chan, Leslie, B. Kirsop, and S. Arunachalam (2005), Open Access Archiving: the Fast Track to Building Research Capacity in Developing Countries. <http://www.scidev.net/en/features/open-access-archiving-the-fast-track-to-building-r.html>

an international environmental NGO, identify ways it could better capture and manage the knowledge created by its individual projects and principal investigators in environmental hot-spots across the globe. Development of Conservation International's system continues to this day in the ongoing implementation of a content management system for creating, disseminating, locating, and repurposing its web site content. Similar approaches would be reasonable for large public health NGOs.

A repository is a major component of an information asset management system that would manage and support every aspect of information creation and dissemination. Information asset management is the ability for people to get whatever information they need, anywhere, anytime, and in compliance with the organization's policy. As part of this function, a repository would enable the NGO to identify best practices, focus on key projects and their users, and look for partnering opportunities.

13.5 Barriers/Challenges to Repository Development

Unfortunately, there are many obstacles to the development and use of such a repository or series of repositories due to insufficient funds earmarked for health problems in developing countries, inefficient application of resources, and lack of technology transfer.¹⁴ In this chapter, three barriers/challenges are highlighted - organizational structure and politics, funding, and collection development policies.

13.5.1 Organizational Structure and Politics

A key challenge in establishing a repository for NGOs is their wide variation in organizational structure that includes confederations, federations, separate and independent organizations, and variations of these.¹⁵ With all these possible structures, the challenge is to create a model that will facilitate the transfer/capture of documents from all of them. Notwithstanding the fact that some NGOs do not work together due to political or philosophical differences. Authors normally deposit versions of their articles and follow a self-archiving method predetermined by the administrator's metadata policy guidelines. This process normally takes 5-10 minutes. A challenge that may arise in this type of situation would be barriers in naming convention standards and more importantly legal issues that may arise from copyrights on any formally published works. Copyright and publisher poli-

14 Delisle, Helen, et al. (2004), *The Role of NGOs in Global Health Research for Development. Health Research Policy and Systems*. Vol. 3(3). 2005. <http://www.health-policy-systems.com/content/3/1/3>

15 NGOs and Organizational Structure: Challenges and Opportunities (2003), Link no longer available.

cies of the country and/or the organization need to be considered when depositing, because normally once deposited the rights then to the publication are transferred to the repository as a whole.¹⁶

13.5.2 Funding

The funding source impacts how and what information an NGO releases and distributes, as well as its fiscal ability to create reports for release. For example, a religious based NGO may choose not to report on contraceptive needs or abortions, although they may have this information. Also, funding can determine which NGOs support what efforts in what countries. If several NGOs with a similar purpose, such as HIV/AIDS prevention, obtain funding from a single source, the probability of obtaining their documents for a repository is greater than if they were funded by a variety of sources, because this would perhaps eliminate some of the constraints on releasing material to the public.

NGOs may be funded by foundations, religious organizations, special interest groups, governments, international or national organizations, or any number of other methods. Their respective funding sources may impact the types and accessibility of reports or other information published. Insufficient funds, of course, may mean little or no publicly accessible information and/or the lack of a publications program. NGO funding sources can also impact the willingness to share information for political or other reasons.

In 2003, the WHO examined the funding sources of NGOs with whom they had official relationships. The majority of NGO funding (41%) came from admission fees and member dues. The next largest funding source was from unspecified grants (21%). The remainder of the funding came from other fund raising (12%); NGO grants (4%); company funding grants (3%); government and inter-governmental grants (4%); conference and publication fees (9%); and government contracts and consultancy fees (6%).¹⁷ It should be noted that there are more NGOs that have unofficial relationships with the WHO and are thus not reported in these statistics. As civil societies have continued to increase in number, funding has increasingly come from governments (approximately USD 1 billion) and other non-governmental agencies (about USD 1 billion annually).¹⁸

16 Bailey C.W. (2008), Digital Scholarship, Institutional Repositories, Tout de Suite. <http://www.digital-scholarship.org/ts/irtoutsuite.pdf>

17 World Health Organization (2006), Some Statistics on NGOs in Relations with WHO. http://www.who.int/civilsociety/csi_statistics/en/print.html

18 World Bank Group (2005), World Bank Funding for Civil Society. <http://web.archive.org/web/20050305024706/http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/CSO/0,,contentMDK:20094251~menuPK:220439~pagePK:220503~piPK:220476~theSitePK:228717,00.html>

13.5.3 Collection Development Police

Given the issues outlined above, it may be impossible and perhaps not even desirable to collect all NGO documents in a single collection. A policy for collection development would need to be agreed upon even among a small group of NGOs with similar interests, such as HIV/AIDS or women's health. Another consideration would be the variation in the types of documents published by NGOs. Not all NGOs publish annual reports. Would preliminary reports or field reports with raw data be included? What about surveys or training manuals? These questions would need to be balanced by the current need for health information in the country.

13.6 Relevant Web Sites in the Public Health Domain

Despite the challenges, there are several examples of web sites that either begin to or already partially fill the role of a repository for grey literature in public health.

- United States Agency for International Development (USAID) <http://www.usaid.gov/>

The USAID library focuses on sustainable development with the primary mission of serving the information needs of USAID staff. USAID documents, reports, publications, and project summaries can be publicly accessed through the Development Experience System (DEXS), which has over 100,000 records with some 20,000 available for electronic download. Its purpose is primarily to strengthen USAID development projects, activities, and programs and make them publicly available. DEXS offers four major services: USAID contractors/grantees can (1) submit documents to the system, (2) search the DEXS database, (3) order documents (paper, electronic, CD), and (4) subscribe to free USAID reports via email. The DEXS submittal process is described in documentation available on the web site. Documents for submittal should include those documents which describe the planning, design, implementation, evaluation, and results of development assistance activities which are generated during the life cycle of the program or activity.

- Human Info NGO <http://humaninfo.org>

Uses Greenstone software. Has 35 to 40 Humanitarian CD Libraries on the Joint United Nations Program on HIV/AIDS (UNAIDS), community development, food and nutrition, health library for disasters, Rural Hygiene in Africa, Africa Collection for Transition, as well as others. About 5,000 copies of each library are distributed annually.

- World Health Organization (WHO) <http://www.who.int/en>

Site can be searched by country or health topic. The WHO Library and Information Networks for Knowledge (LNK) provide access to WHO-produced recorded information and to worldwide health, medical, and development information re-

sources. The Information Networks for Knowledge provides technical support to help improve the health-related information transfer structure in developing nations. The services are primarily for WHO headquarters, regions, and country offices; ministries of health and other government offices; health workers in Member States; other UN and international agencies; and diplomatic missions. The WHO library programs help regions and developing countries achieve self-sufficiency in providing information services to the health sector. The library has over 70,000 bibliographic records and 30,000 links to full text documents. Blue trunk libraries concept was developed by the library for installation in district health centers in Africa to compensate for the lack of current medical and health information. The collection of more than 100 books on medicine and public health is shipped in blue trunks fitted with two shelves. It is not known if CDs are part of this shipment. Unknown if there is a repository for NGO grey literature and/or the submittal process.

- Global Health Council <http://www.globalhealth.org>

World's largest membership alliance of healthcare personnel, NGOs, organizations, government agencies, and other public and private institutions. Mission is to ensure that information and resources are available to those who strive for improvement and equity in global health. Advocacy group who reports on world health problems to governments, public and private organizations, and the global health community. Publications section includes a variety of press releases, reports from NGOs and other agencies, notes from the field, annual reports of the Council, and other publications. Unknown if there is a repository and/or the submittal process, but it does have a member login/password.

- British Library of Development Studies (BLDS) <http://blds.ids.as.uk/BLDS>

Europe's largest library on international development at the Institute of Development Studies in Sussex. Extensive collection of government publications, NGO publications, World Bank, United Nations, World Trade Organization, and research institutes worldwide. They also have over 200 development journals that are scanned and selected articles added to the BLDS catalog. Online library catalogue can be searched at <http://blds.ids.ac.uk/>. Document delivery is via interlibrary loan; some items free to download. Not a repository, but a great prospect for finding NGO material.

- The New York Academy of Medicine (NYAM) <http://www.nyam.org/library/>

The NYAM Library's Online Catalog contains over 250,000 bibliographic records, 1,400 journals, as well as rare books and manuscripts primarily acquired since 1972. They have served the general public interested in access to health and medical information since 1878. Library services to aggregation and dissemination of "grey literature" in public health, disaster preparedness, and urban health through web-based portals. A growing repository digitization program for both web-based and at-site visiting users.

- Open Access Initiative (OAster) <http://www.oaister.org>

The Open Access Initiative provides access to 21,984,755 records from 1,134 contributors. OAster is a union catalog of digital resources. They provide access to digital resources by "harvesting" descriptive metadata (records) from numerous repositories, using OAI-PMH (the Open Archives Initiative Protocol for Metadata Harvesting). Collection focus is on digital records of any type and may include digital records with restricted access in addition to those that are freely available. Subject is not restricted to public health. Is not a repository, but is a good source for finding international public health material, including "grey literature."

Most of the web sites identified above are searchable by geographic area and have some project report summaries. Some sites are subject oriented, such as the Human Info NGO and the Global Health Council. The Human Info NGO has created repositories on CDs by subject area for distribution to developing nations and other interested parties. USAID has a growing database of health information from its partners and a defined process for the submittal of documents from NGOs to DEXS. The BLDS collects material in many subject areas and provides, via email notification, updates to the collection. However, the documents are not always in an electronic format, free, or current, though the library does make every effort to efficiently disseminate documents to people who request them.

The WHO web site has vast resources and pointers to documents, however, to our knowledge, it makes no effort to collect NGO material. The WHO library is primarily for WHO and its associated organizations. The WHO maintains relations with other international organizations and external partner NGOs. Formal relations with NGOs require that certain criteria be met. In January 2009, there were 185 NGOs that had official relations with the WHO.¹⁹ The WHO also maintains informal working relations with other NGOs. Regional or national NGOs affiliated with international NGOs are usually charged with developing and implementing a program of collaboration with the regional and national levels of WHO in order to ensure implementation of health-for-all strategies at the country level.²⁰ Although WHO has the Library and Information Networks for Knowledge (LKN) that provide access to WHO-produced and recorded information as well as to worldwide health, medical, and development information resources, it has to our knowledge, neither a repository for their NGO documents nor current initiatives underway for such a repository. As can be seen in Figure 1, the number of NGO members has increased substantially over the past 19 years with 185 NGOs having formal relations with the WHO in 2009.²¹

19 World Health Organization (2009), List of 185 Official Non-Governmental Organizations in Official Relations with. <http://www.who.int/civilsociety/relations/ngolisteb120.pdf>

20 World Health Organization. Relations with Other International Organizations and External Partners NGOs. http://w3.shosea.org/en/Section1257/Section1259_5127 Link no longer available.

21 World Health Organization (2009), List of 185 Official Non-Governmental Organizations in Official Relations with. <http://www.who.int/civilsociety/relations/ngolisteb120.pdf>

Figure 1: NGO Members and Applicants with Official Relationships with the WHO – 1990-2009.

These examples, while scattered, could serve as the basis for more consistent repository development. However, a more community-wide effort is needed to achieve this goal.

13.7 Repository Models and Platforms

Assuming that the barriers could be overcome, there are several repository models that may be viable for emulation in developing a repository and several platforms on which formal repositories by NGOs could be built.²² These include:

13.7.1 Repository Models

PubMed Central is a digital archive of life sciences and biomedical journal literature developed and managed by the National Center for Biotechnology Information at the U.S. National Library of Medicine (NLM). This system features required participation for all investigators funded by the NIH, public release dates within one year of original publication, and retention of copyright by the author or corporate sponsor. In January 2008, the National Institute of Health's (NIH's) new policy on enhancing public access to archived publications was implemented. Authors are now required to submit an electronic version of their final manuscript

22 Johns Hopkins University (2003), Scholarly Communications Group. Publishing Models. <http://openaccess.jhmi.edu/publishing.cfm>

to PubMed Central upon acceptance for publication. The Policy is intended to: (1) create a stable archive of peer-reviewed research publications resulting from NIH-funded research; (2) ensure the permanent preservation of these vital, published, research findings; (3) secure a searchable compendium of these peer-reviewed, research publications that NIH and its awardees can use to manage more efficiently and to better understand their research portfolios, to monitor scientific productivity, and ultimately, help set research priorities; and (4) make published results of NIH-funded research more readily accessible to the public, healthcare providers, educators, and scientists.²³ Such a model may work for NGOs, especially if they have partners or other organizations assisting them in their work.

DSpace at MIT (Massachusetts Institute of Technology) is a digital repository created to capture, distribute, and preserve the intellectual output of MIT. DSpace features access to content through the web. Similar to PubMed Central, DSpace at MIT (and other DSpace institutions) uses the submission model; however, participation at MIT is voluntary. Authors from among the faculty provide their final manuscripts to the DSpace system. Some initial information is provided along with the manuscript, and then a “bibliographic record” or metadata file is finalized by library staff. The manuscripts are grouped into collections that represent particular communities of interest, academic colleges, or disciplines. DSpace at MIT offers the advantage of digital distribution and long-term preservation for a variety of formats, including text, audio, video, images, datasets, etc., and the opportunity to provide access to all the research of the institution through one interface.²⁴

Google Scholar <http://scholar.google.com/> is a search service that allows users to search for scholarly material across the web from web sites that are deemed scholarly and view either abstract or full text search results.²⁵ Special metadata is no longer necessary for all the pre-publication versions of papers which are deposited anywhere on the web.²⁶ Submission indexing eliminates the need for an NGO to develop an elaborate search system for its own documents. Much of Google Scholar’s index is a subset of the larger Google search index consisting of journal articles, technical reports, preprints, theses, books, and other scholarly documents. Google scholar has built a very strong medical index, partly due to its ability to crawl full-text journals as well as specialized bibliographic databases such as PubMed.²⁷ Google Scholar has improved many of its features to accommodate the

23 NIH Public Access Policy (2008), Department of Health and Human Services. <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-08-033.html>

24 Johns Hopkins University (2003), Scholarly Communications Group. Publishing Models. <http://openaccess.jhmi.edu/publishing.cfm>

25 Sullivan, D. (2004), Google Scholar Offers Access to Academic Information. Search Engine Watch. <http://searchenginewatch.com/searchday/article.php/3437471>

26 ALPSP (2005), Preprint and postprint repositories and their impact on publishing. <http://www.keyperspectives.co.uk/openaccessarchive/Conference%20presentations/Swan%20-%20ALPSP%20IR%202005.pdf> Link no longer available.

27 Vine, R. (2006), Journal of the Medical Library Association, Google Scholar. <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1324783>

demands for medical searches. The advanced search has recently gone live, which provides subject area searches, author searches, and, most importantly, the ability to return articles published within date ranges. Google Scholar's unique ranking feature then ranks the returned results with the most relevant results appearing first.

Open Access Archives (OAAs) is another model that would encompass the variety of types of information published by NGOs. Open Access Archives are repositories that have a policy of providing journal articles free and online. Typically this is done using self-archiving; the NGO would submit documents to an institutional or community archive of its choice such as arXiv.org, CiteSeer, or another repository that was appropriate for the content. This model is favored in the article by Leslie Chan as a quick way to build research capacity in developing nations.²⁸

For small NGOs, the approach of the **Association of Learned and Professional Society Publishers (ALPSP)**, http://www.alpssp.org/ngen_public/, may be of interest. These are "community" organizations that have been created to build the capacity of the small publishers using the digital environment.

13.7.2 Repository Platforms

Digital Commons, hosted by the Berkeley Electronic Press (bepress), is the largest manufacturer hosted repository platform that can help institutions collect, showcase, and preserve scholarly output. They build the repository to match the institution's web site and provide unlimited technical support. Digital Commons features online submissions, content management, advanced indexing, support for multiple content types, and conversion of popular document formats to PDF. Digital Commons offers its customers a platform for repository development that guarantees 99.9% uptime, unlimited tech support, and setup of the system in 1 to 2 weeks.²⁹ Examples of health repositories currently using bepress software include:

Government of South Australia Department of Health <http://www.publications.health.sa.gov.au/> (Australia);

Houston Academy of Medicine, Texas Medical Center <http://digitalcommons.library.tmc.edu/> (USA);

Royal College of Surgeons Ireland <http://epubs.rcsi.ie/> (Ireland)

DSpace has been a pioneer in open source digital repository software and is the most commonly used software platform for developing an institutional repository. DSpace is not a hosted solution, but their site does provide links to numerous service providers if an institution does not have the technical expertise or re-

28 Chan, Leslie, B. Kirsop, and S. Arunachalam (2005), Open Access Archiving: the Fast Track to Building Research Capacity in Developing Countries. <http://www.scidev.net/en/features/open-access-archiving-the-fast-track-to-building-r.html>

29 Bepress, The Berkeley Electronic Press Home Page. <http://www.bepress.com/index.html>

sources for developing a repository. DSpace is free open-source software, released under a BSD license, that is easy to implement and completely customizable. DSpace supports a wide variety of formats and features a large user community and discussion forums for obtaining technical assistance.³⁰ Examples of health repositories currently utilizing DSpace software include:

College of Public Health Sciences <http://cphs.healthrepository.org/> (Thailand);

University of Calgary E-Health Repository <https://dspace.ucalgary.ca/handle/1880/42949> (Canada);

WHO EHA Institutional Repository <http://whoindonesia-eha.healthrepository.org/> (South East Asia)

EPrints is a UK-based open source software flexible platform for building high quality and high value repositories. It is the self-proclaimed easiest and fastest way to set up repositories for research output from literature, scientific data, and reports through archived documents, multimedia, or documents. According to EPrints own database of repositories, there are currently 269 known implementations of EPrints repositories, which are mostly found in Europe. However, the Registry of Open Access Repositories (ROAR) lists 333 known repositories at the time this chapter was written. The EPrints Services team offers fee-based advice and consultation that ranges from initial help all the way through to a completely managed institutional repository.³¹ Examples of health repositories currently utilizing EPrints software include:

University of Birmingham School of Health Sciences: http://eprints.bham.ac.uk/view/divisions/sch_heal.html (UK);

University of Nottingham Department and Faculty of Medicine and Health Sciences: School of Clinical Laboratory Sciences <http://eprints.nottingham.ac.uk/> (UK)

Fedora Repository Project is an architecture for developing an institutional repository system. The current community project has been released as the Fedora Repository Project and the community responsible has been officially named the Fedora Commons. The current (2009) release of Fedora Repository offers advanced database technology for digital content preservation and advanced features such as messaging (for within site help) and administrative clients. Fedora has been growing very rapidly in popularity due to its strong technology, excellent data handling, and very active community. Since it is open source software, institutions also see the high benefit of not having to pay licensing fees.³² The most notable example of is from the University of Prince Edward Island Robertson Library. It is commonly referred to as “Icelandora” within the development community. <http://library.upei.ca/> ;

30 DSpace Home Page. <http://www.dspace.org>

31 Eprints, Eprints Home Page. <http://www.eprints.org/>

32 Fedora Commons Software Home Page. <http://www.fedora-commons.org/>

Another example is The Australian Research Repositories Online to the World <http://arrow.edu.au/> (Australia)

Greenstone digital library software is free, open-source, and multi-lingual platform for developing a repository and publishing it on the Internet or on CD-ROM. An NGO could use this software to build its own digital libraries. Greenstone is produced by the New Zealand Digital Library Project at the University of Waikato and developed and distributed in cooperation with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Human Info NGO. The Human Info NGO is based in Antwerp, Belgium and works with United Nations agencies and other NGOs. They have established a worldwide reputation for digitizing documents in human development and making them widely available and free to developing nations and on a cost-recovery basis to others. A new development with Greenstone is the ability to build collections on a remote server while using a modified version of the Greenstone Librarian Interface, so there is no need to run Greenstone locally. Multiple users can collaborate on the same collection, although not simultaneously.³³

The software for the basic development of a repository is available, and most of it is open source. Greenstone has the additional benefit of being multi-lingual and portable. However, the submission and/or harvesting approaches for capturing grey literature must be carefully considered, as would a collection development policy.

13.8 Conclusions

As an information management and research company, Iia believes that grey literature is a vital component of public health information, particularly in developing countries. One or more repositories of grey literature from across NGOs in the public health community would be beneficial to researchers seeking to use this information. While there are many barriers to achieving such a repository, the benefits would be numerous and a variety of models could be used. There are several existing web sites that begin to fill this need, but a more community-wide effort is required in order to provide consistent, complete, and effective coverage of this grey literature. While the benefits to the research community are obvious, the ultimate benefit is to advance the use of public health research in improving the lives of people world-wide.

33 Greenstone Digital Library Software. Home Page (2009). <http://www.greenstone.org/>

Part II, Section Five

Future Trends in Grey Literature

What does the future hold in store for grey literature? Some people anticipate that since Internet and Google push an unimaginable amount of information to the user, grey dissemination channels will eventually disappear. However, this notion is not shared by all.

As we stated in our Introductory Chapter, grey literature will not disappear, but will instead continue to play a significant role alongside commercial publishing even if the borderline between “grey” and “white” (commercial) literature will become increasingly indistinct. This holds particularly true in an environment shifting towards open access to scientific and technical information. Actually, we expect that the proportion of “grey” documents published on the Web will continue to increase and the Internet will instead encourage a greater diversity in the types of “grey” resources available, such as raw data, personal notes, lectures, etc.

Our predictions are based on empirical data and observations, which show that despite the rapid development of the open access movement only a part of reports and theses have become freely and easily available on the web. While other types of grey documents remain virtually inaccessible. Thus, in this section we choose not to focus on whether grey literature has a future or not, but instead through the eyes of four information professionals, we examine new environments of mediation and information transfer as well as innovative perspectives for non-commercial documents and their dissemination.

The first chapter in this section begins by looking to new forms of scientific communication. For Banks, “findability” of grey literature “is a less pressing concern than before”. Banks turns to consider the preservation of Web2.0 content, particularly from blogs and twitter. Based on discussion and a case study, he urges that “general digital preservation principles combined with an evolving understanding of the uses of Twitter would be necessary in developing preservation criteria for blogs and tweets.”

In the previous section, we saw how Gentil-Beccot appeals for increased investment in open archives, especially institutional repositories. However, we are still left with the measure of return on investment? The second chapter in this section by Schöpfel and Boukacem confronts some of the financial aspects of grey literature in institutional repositories (IR). “Grey does not mean free.” Until now, the problem has been that little is known about repository costs and usage statistics. This chapter attempts a state of the art and suggests some COUNTER derived

metrics that may assist in comparing archives and their investment policies, such as IR costs per item, IR costs per user, and IR items per scientific output.

The third chapter in this section by Jeffery and Asserson places grey literature in the context of eScience. The authors introduce the e-research environment and describe the European CERIF format for current research information systems (CRIS), which allows for interoperability between systems and institutions. Their reasoning is twofold: first, grey literature should be stored in open repositories and second, the metadata should be compliant with the CERIF format and stored in the current research information system. They explain that “with the two sources linked to allow optimal use of the characteristics of the CRIS and the repository (...) not only is the grey literature object provided with better metadata for retrieval but also is associated with the other contextual metadata in the CRIS”. This would include projects, persons, organisations, facilities, equipment, events, products, patents, etc. They continue “this further places grey firmly in the research environment together with other publications and products. This architectural approach positions optimally grey literature.”

The fourth and final chapter in this section provides an overview on grey literature in higher education - not as a resource but as an object of teaching in order to “gauge the current place of grey literature in library and information science education”. Rabina examines here course descriptions and syllabi among the 2009 top ten LIS graduate programs in the United States. She concludes by recommending grey literature be taught in cross-curricular programs in accordance with the interdisciplinary scope of grey literature content.

In comparison with the other sections in this book, this section remains quite open-ended. While there is no one final conclusion, we do ask the reader to bear in mind a few key questions:

Should grey literature be linked to primary research data (datasets) and if so, how? How can the quality of grey items be assessed and guaranteed? Do usage patterns differ between grey items and journal articles, books, etc.? How should the concept of grey literature be adapted to the emerging environment of eScience? How can LIS schools and colleges adequately ensure the coverage of grey literature in their curricula programs? And, last but not least, what kind of empirical evidence should be produced in order to develop a better understanding of non-commercial scientific information?