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# Changing roles of reference librarians: the case of the HKUST Institutional Repository

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## Abstract

**Purpose** – This paper proposes describing how reference librarians in an academic library recruit content for its institutional repository, and how their roles have been changed in the process.

**Design/methodology/approach** – This paper describes the background on how institutional repositories have developed in response to the open access movement. The case of the Hong Kong University of Science and Technology (HKUST) Institutional Repository is described in detail, showing different strategies that reference librarians employed in recruiting content. The strategies include encouraging researchers to self-archive papers, scanning web sites, capturing pre-existing collections of grey literature, and downloading from open access sources.

**Findings** – The paper illustrates how the roles of reference librarians are changed in the process of building the institutional repository. There are extensions of existing roles in terms of system evaluation, advocacy and reference services. Brand new roles include content recruitment and interpreting publishers' policies. It also points out possible directions which can make the repository sustainable.

**Practical implications** – The paper provides a very useful case study to which other academic libraries may refer when they plan to develop their own institutional repositories.

**Originality/value** – This paper provides in-depth descriptions on the changing roles of reference librarians not covered in previous literature. Discussions on policies, strategies, barriers and challenges will have reference value for academic libraries who want to embark on a similar project.

**Keywords** Reference services, Archiving, Academic libraries, Electronic publishing, Librarians, Knowledge management

**Paper type** Case study

## Institutional repositories: trends and developments

The scholarly communication landscape is evolving. The internet has become an essential medium for information exchange. Researchers increasingly publish their research results, mainly preprints, in subject-specific and web-based archives for wider and faster dissemination. The success of electronic preprint archives spurred the Open Archives Initiative (OAI) which promotes author self-archiving and interoperable standards for data file sharing (Van de Sompel and Lagoze, 2000). A major outcome of the OAI is its Protocol for Metadata Harvesting. A different but related force is the open access movement which campaigns for free and unrestricted online access to research literature worldwide. Among the various public statements on open access, the most influential ones were made in Budapest, Bethesda, and Berlin (Suber, 2005).

Motivated by these external forces and internal budget crises, academic institutions are building institutional repositories (IR) to capture, disseminate, and preserve the



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scholarly output of their researchers on a free and interoperable basis in digital format. The movement gained momentum with the release of two open source systems: Eprints, developed by the University of Southampton in late 2000, and MIT's DSpace in 2002. Both systems now have numerous installations.

The year 2004 was a landmark year for IRs as the issue of open access was recognized by national governments. In July, the Science and Technology Committee of the UK Parliament issued a report recommending that publicly-funded institutions should "establish institutional repositories on which their published output can be read free-of-charge online". The Committee further recommended that the government should appoint a central body to oversee their implementation (Albanese, 2004). Later in the year, the Wellcome Trust, a major funding body for biomedical research in the UK, declared its strong support for open access by announcing that all the research results made under its auspices must be made publicly and freely available on an open archive within six months of publication (Fazackerley, 2004). Other public agency groups such as the US National Institutes of Health and Australia's National Scholarly Communications Forum share a similar vision (Douglas, 2004).

The Institutional Archives Registry (<<http://archives.eprints.org/eprints.php>>) tracks the number and size of open access archives across the globe. As of February 2005, the number reached 279. Hong Kong University of Science and Technology (HKUST) Library showed its early support to open access by joining the Scholarly Publishing and Academic Resources Coalition (SPARC) in 2001. The HKUST Institutional Repository is one of the 279 archives that have joined forces in the open access movement. It is estimated that within ten years, all major universities are likely to be running an IR (Yeates, 2003).

### Literature review

A growing pool of literature discusses the roles librarians play in developing IRs. Chang (2003) proposes that it is necessary for librarians to be conversant with digital collection management and open archive information system management skills. Library staff and authors need to be trained to prepare documents in an acceptable format and to submit content to the repository using a simple interface. Some libraries, like the University of Glasgow, emphasize a fully mediated service for their faculty members, where library staff manage the whole submission process from metadata entry, file conversion to uploading (Ashworth, 2004).

In terms of defining the collection, librarians need to establish content management policies. Librarians are experienced in selecting, describing, storing, and managing information content. They can negotiate with users on content priorities such as what metadata to store and present, should teaching materials be included, and how to handle successive drafts of the same paper (Genoni, 2004). Genoni also suggests that librarians should evaluate the performance of the collection and make decisions relating to access, conservation, and preservation.

Ideally, voluntary submissions from researchers will seed an IR and sustain its growth. The real world is always very different. Researchers may support the project in principle, but very few take action voluntarily. Librarians thus have to take a proactive role in garnering content for their repositories and work towards a sustainable approach (Mackie, 2004).

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Traditionally, academic library staff organize and disseminate scholarly information largely acquired from commercial vendors. The role of librarians is now expanding to include collaborating with information technology (IT) staff and academics to manage and disseminate research output and learning objects emanating from their own institutions (Horwood and Sullivan, 2004). Libraries have moved beyond a custodial role to contribute actively to the evolving scholarly communication process (Crow, 2002).

IRs, open access, and self-archiving are unfamiliar concepts to most researchers. Advocacy then becomes a crucial aspect of any IR project. At the University of Melbourne, librarians visited departments, maintained a promotional web site, and showed impressive usage statistics on individual papers. They also published in their university newspaper and held related seminars (Horwood and Sullivan, 2004).

In summary, the general consensus is that the central challenge for developing an IR lies not in its technical implementation, but in instilling a change of mindset among researchers, to make self-archiving an integral part of their academic life (Nixon, 2002).

### **HKUST Institutional Repository**

HKUST opened in October 1991 with English as the medium of instruction. The university community consists of 450 full-time faculty members, 5,500 undergraduates, and 2,800 postgraduates. In November 2004, the university achieved a ranking of 42 among 200 top universities in the world (*Times Higher Education Supplement*, 2004).

The HKUST Library, with a workforce of 22 librarians and 75 support staff, is committed to serve the study and research needs of all its community members. Some of its ongoing digital projects are the Electronic Course Reserves, Electronic Theses, Digital University Archives, and News Clippings Online.

The idea of establishing an IR at HKUST grew from a library staff development workshop in late 2002. Kimberly Douglas, the University Librarian of the California Institute of Technology, spoke at this workshop on "E-prints, OAI and Institutional Repository".

The Library then formed a task force to investigate the issue. Like other universities, HKUST Library started with the basic premise that the scholarly output of HKUST researchers is an institutional intellectual asset, one that should be carefully guarded and preserved for posterity. Although in most cases, researchers have transferred the copyright of their publications to the publishers, they may still exercise their self-archiving rights to make their scholarly work openly accessible if all publishers' requirements are complied with.

Once we agreed on this principle, gathering library-wide support for the project was easy. Colleagues from different departments were involved: Systems, Collection Development, Acquisitions, Administration, Cataloging, and Reference. We formed a work team of eight reference and subject librarians (later referred to as reference librarians) and five data entry staff. Policies, procedures, and liaison issues fell within the purview of the committee of reference librarians, while the committee of department heads gave strategic guidance and ruled on critical issues.

The HKUST Institutional Repository started in February 2003 with 105 computer science technical reports. It now holds 1,740 documents, including preprints, technical

reports, working papers, conference papers, journal articles, presentations, book chapters, patents, and PhD theses. They are mainly PDF files with some Powerpoint presentations and program files. The documents are grouped in 38 communities (departments) and then by 119 collections (document types) (see Table I). They were accessed 12,099 times in December 2004.

The HKUST Institutional Repository (< <http://library.ust.hk/repository/>>) is fully OAI compliant. We participate in OAIster (< <http://oaister.umdl.umich.edu/o/oaister/>>) and the Google pilot project in which MIT and 16 universities around the world have teamed up with the search engine company to develop new search tools to discover scholarly materials on the web.

### Building the HKUST Institutional Repository: changing roles of reference librarians

All of the reference librarians played important roles in building the HKUST Institutional Repository. They have been engaged in all stages of its development: the definition of goals and scope, evaluation of system and content, forming strategies and procedures, interpreting publishers' policies, contacting and servicing faculty members, acquisition of content, and promotional efforts. The learning curve for the past two years has been steep. As suggested in the literature review section, we have juggled with multiple roles. While some of these roles are extensions of existing ones, others are brand new. Below, we describe how reference librarians were involved in developing the HKUST Institutional Repository and the changing roles we have played.

#### 1. System evaluation

In early 2003, we partnered with our Systems colleagues to evaluate Eprints and DSpace. We approached the task like a database evaluation, by comparing and contrasting the two systems based on a number of criteria: database structure, interface, search capabilities, special features, software requirements, CJK support, speed and reliability, and export options. Advanced search and sort options were only available in Eprints, but DSpace supported browsing by more search fields. Eventually, we selected DSpace, mainly because EPrints did not fully support unicode

Collection	Size	Percentage
Conference papers	504	27.7
Working papers, preprints, technical reports, research reports	500	27.5
Journal/magazine articles	333	18.3
Theses	330	18.1
Patents	58	3.2
Presentations	53	2.9
Book chapters	34	1.9
Miscellaneous	7	0.4
Total	1,819 <sup>a</sup>	100.0

**Note:** <sup>a</sup> The actual size is 1,740 as of January 20, 2005, with 79 duplicate items entered in more than one community

**Table I.**  
Collection size of HKUST  
Institutional Repository

at the time. That DSpace had the advantage of designing its software based on experience gained from Eprints was also a consideration.

We encountered some technical problems with CJK encoding at the beginning, but the Systems Department overcame them. After developing the prototype, the reference librarians wrote the online help for browsing and searching, like creating a database search guide. Systems also solicited our input on the design of our document submission forms: one for IR contributors and another for internal library use.

## *2. Formulating and interpreting policies*

Genoni (2004) suggests that librarians should play the role of a content manager and establish relevant policies. What to include and exclude? How to determine copyright ownership for different types of documents? We addressed these issues by creating guidelines on our staff manual (see Table II). The most straightforward document types were presentations, working papers, and technical reports; we could go ahead to archive them after obtaining authors' consent. For conference proceedings, we had to seek permission from the publishers. US patents were eligible candidates too, since they are in the public domain. Standards, however, were excluded, since copyright belongs to the issuing organizations.

To inform our research community about the scope and goals of the IR project, the access services librarian wrote an online document "About the Repository" accessible from our IR homepage. It clarified copyright and licensing issues, and laid down policies concerning multiple versions of a paper and item withdrawal from the repository.

At the document level, we set guidelines for our indexers to ensure the metadata were created with consistent standards. We decided that authors' names should match the name authority files created by the Cataloguing Department. If no such record existed, we consulted the academic calendar, an official university publication containing a comprehensive staff list. For Chinese documents, the author's English name would be followed by the author's Chinese name in parentheses.

Indexers assigned keywords to individual documents. It was decided at the outset not to use controlled vocabulary such as LC subject headings. Using a thesaurus approach would create unnecessary barriers for non-cataloguers. We found it sufficient to simply extract keywords from the text of the documents.

Type	Copyright	Action
Book chapter	Publisher	Seek permission
Book	Publisher	Seek permission
Conference paper	Author	Archive
Conference proceeding	Publisher	Seek permission
US Patent	Public domain	Archive
Working paper, technical report	Author	Archive
Presentation	Author	Archive
Standard	Issuing organization	No

**Source:** Chan (2004a)

**Table II.**  
Guidelines on different  
publications

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A paper may have several authors from different departments. The question of mapping paper to department arose. Should the paper be mapped only to the first author's department? How about the successive departments? To provide multiple access points, we created metadata records for all departments concerned with the full-text file residing on the department of the first author. Decisions, policies, and guidelines have a life of their own. They grow and evolve over time. The working manual must be constantly updated to provide a point of reference for the IR team.

*Publishers' policies.* Publishers' policies were more difficult to handle than internal policies. Authors may have signed restrictive licensing agreements with publishers which bar self-archiving. Yet in many cases, authors do retain some degree of self-archiving rights. Interpreting publishers' policies and determining authors' self-archiving rights became a major task for the reference librarians. A convenient starting point was, of course, the Rights Metadata for Open Archiving (ROME) directory, which summarizes the policies of over 100 publishers. However, not everything was clear cut. While some publishers such as Elsevier and Springer have distinct policies on self-archiving, other publishers have unclear policies, and still others have no policy at all.

The different versions of a paper further complicate the issue. A publisher may allow the archiving of a particular version of a paper which differs from the one on hand. We had to observe this constraint and tried to obtain the permitted version from the author. To clarify this somewhat complex issue, we developed working guidelines to set out the implications and actions called for in different scenarios (see Table III and Figure 1).

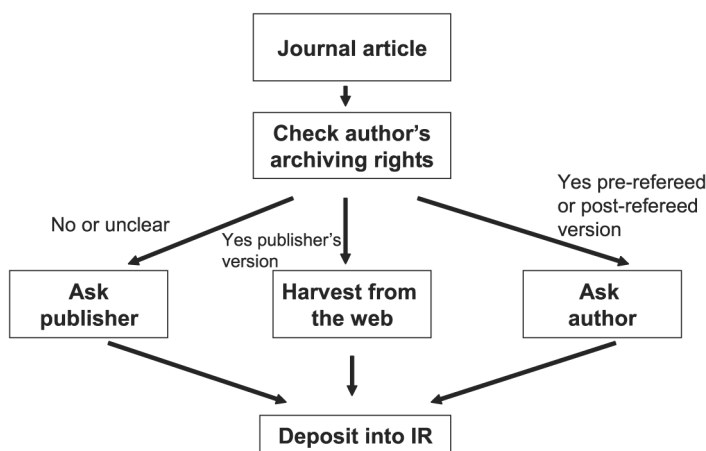
In Table III, the ideal scenario is that the publisher explicitly allows self-archiving of the journal paper in all versions (S6), meaning we can post whatever version is available on hand. If the publisher's version is allowed, but there is no stated policy on other versions (S2), we assume that the publisher is generous enough to allow the archiving of the pre-refereed and post-refereed versions as well. However, if the publisher allows just the post-refereed version or either the pre-refereed or post-refereed version (S4 and S5), we have to ask the faculty member for the post-refereed version if we can only harvest the publisher's version. We did not find it effective to ask for the pre-refereed versions of papers since faculty members rarely retained them. If we cannot trace the publisher's policy (S7), we have to seek clarification from the publisher and ask for permission to archive the version we have on hand.

A closer examination of the ROME entries reveals important details to be observed. Some publishers, for instance, the Institute of Mathematical Statistics, permit self-archiving on condition that a hyperlink to the official journal site is provided. Many publishers require a copyright acknowledgement statement. We tailored these statements to meet the unique demands of each publisher, such as the American Institute of Physics, Association for Computing Machinery, Blackwell, and IEEE, and inserted them into the metadata of those papers concerned.

We did not stop at the ROME site. We searched the web for publishers not analyzed on ROME, and identified their policies and requirements. If we could not trace the policies of certain publishers, we wrote to them to ask for permission, usually

**Table III.**  
Guidelines on journal  
articles

Version available on hand	Publisher's policy						
	No archiving is allowed S1	Allows publisher's version S2	Allows pre-refereed version S3	Allows post-refereed version S4	Allows pre- or post-refereed version S5	Allows all versions S6	Not specified S7
Pre-refereed version	No	Yes	Yes	Yes	Yes	Yes	Ask publisher to clarify and seek permission to archive
Post-refereed version	No	Yes	No	Yes	Yes	Yes	Ask publisher to clarify and seek permission to archive
Publisher's version	No	Yes	No	Ask faculty for post-refereed version	Ask faculty for post-refereed version	Yes	Ask publisher to clarify and seek permission to archive



Source: Chan (2004b)

Figure 1.  
Process in handling  
journals

with a defined list of articles that we wished to archive. We aimed high, seeking permission for the publisher's version and explained the value of open access and the HKUST Institutional Repository in detail. Our Collection Development manager negotiated with 40 publishers last year, and successfully obtained approval from 19 of them for 120 journal and conference papers. The Society for Information Display alone accounted for 32 papers. We approached big and small commercial publishers as well as professional societies. Overall, the small publishers and professional societies were more inclined to agree to IR archiving.

### 3. Content recruitment

Gibbons (2004) comments that the "recruitment of content, not technology, is the greatest barrier to success". Ware (2004) surveyed 45 IRs and found out that the average number of documents per repository was only 1,256. Both point to a fact experienced by all libraries: content building is a painfully slow and uphill process.

In September 2003, we e-mailed all faculty members inviting direct submissions to the HKUST Institutional Repository. The response was pathetic; only two papers were received. The total number of direct submissions reached 46 by the end of 2004, by no means an encouraging figure. Academics have busy schedules, and will consider self-archiving extra administrative work, however much they understand and support the idea of open access and IRs. We therefore adopted more aggressive strategies to build our IR.

*Scanning web sites.* The reference librarians checked departmental and personal homepages of individual faculty members, and learned that 89 out of 450 of them posted some of their full-text research publications on the web. The University librarian e-mailed them and obtained permission to post about 150 documents in the IR. At a later stage, a similar scanning exercise was done on all the research centers and institutes on campus. As a result, approval on 83 papers was obtained.

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*Working papers and technical reports.* We then decided to capture pre-existing collections of grey literature, i.e. working papers and technical reports. We surveyed all departments and found a wealth of these was tucked away either in printed or electronic format. The University librarian wrote to these departments and offered to preserve them digitally in the IR. We managed to add close to 400 papers through this means.

*PhD theses.* The Library maintains an Electronic Theses Database which provides the metadata, abstracts, and full-text of all the MPhil and PhD theses produced at HKUST. It was decided to include only PhD theses in the HKUST Institutional Repository. Our colleagues in Acquisitions contacted PhD alumni to secure their consent. In total, we added more than 300 open access theses to our IR. To simplify workflow, we created metadata for each thesis and provided a link to the Electronic Theses Database. A mechanism has been established to capture new PhD theses on a regular basis.

*Conference papers.* Over the years, HKUST has hosted a number of conferences and symposia. We searched the library catalog and singled out 50 conference proceedings to work on. For those proceedings published in-house, copyright belongs to the university. We targeted those papers authored by HKUST members and e-mailed them for permission. The Collection Development manager also helped to secure copyright clearance from professional societies and commercial publishers. A total of 142 out of 193 papers identified were archived, a 74 percent success rate.

*University archives.* With the help of our colleagues in the Archives Department, we sifted through a number of publications affiliated to HKUST and added 80 more documents to our IR. Every little harvest counts, however small it is.

*Open access sources.* Open access sources were another channel we explored, which turned out to be quite fruitful. HKUST researchers publish in open access venues such as the Directory of Open Access Journals (DOAJ) and PubMed Central. We had to think of creative ways to exploit these sources. An example is we used both DOAJ and ISI Web of Science together to track down open access articles published by our researchers. DOAJ only allows users to search some of the covered journals at the article level, and author affiliation is not a searchable field. To overcome these problems, we compared the journal lists of DOAJ and Web of Science to locate common titles. We then searched Web of Science, limiting our searches to these titles with HKUST in the address field. Having ascertained publishers' policies, the articles were deposited into our IR.

Some publishers, to our pleasant surprise, have liberal policies towards author self-archiving, and allow the posting of the publisher's version. Emerald, American Mathematical Society, Cambridge University Press, and Institute of Physics are just some of them. Many of our researchers are US patent holders. After obtaining approval, we collected the patents by using US Patent Fetcher which has the ability to concatenate a multi-page patent into a single PDF file. The HKUST IR grew by another 200 as a result of all these efforts.

#### *4. Liaisons with faculty members and departments*

The University librarian and all reference librarians are responsible for liaising with faculty members and departments. In addition to soliciting readily available collections

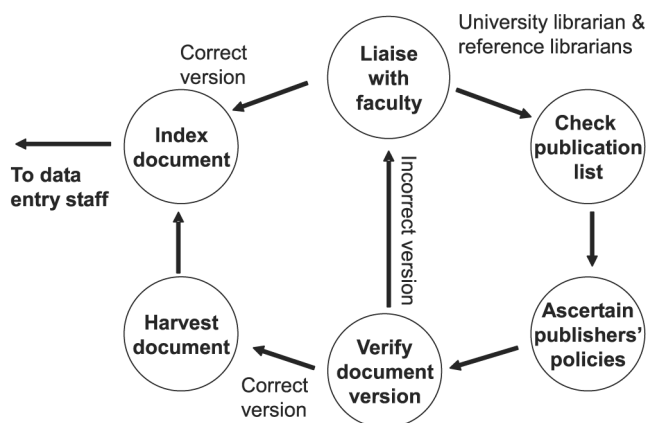
of working papers and technical reports from departments, we contacted faculty members, asking for their complete publication lists, if the ones on the web were only representative. We asked for the correct versions of papers. We encouraged them to dig up their files from their computers and send us the soft copies. We also reached out to retired and emeritus professors to recruit content.

The entire process of content building has been an ongoing experiment for all the reference librarians. It requires a great deal of time, patience, and meticulousness (see Figure 2). We have to be flexible and persistent. We explore and exhaust all likely channels, both within and outside the library.

*Advocacy.* Advocacy is nothing new for reference librarians. We assist faculty members and students with their research and study needs through our extensive reference and instructional services. In this new connection, we reached out to faculty members in a number of ways: on a one-to-one basis through informal conversations, small group discussions, departmental visits, and campus-wide promotion.

*Education.* We seized every opportunity to inform our faculty members of the open access movement, the trends of open access publishing, and increasing governmental and organizational support for IRs. Some faculty members do not make clear distinctions between pre-refereed versions and post-refereed versions, or they simply post the publisher's versions of their papers on their homepages, not knowing that this may infringe on copyright. We introduced new concepts, clarified their misunderstandings, and ironed out their worries and concerns.

*Advisory role.* Faculty members normally do not check individual publisher's policy or negotiate for self-archiving rights. We have to do the ground work for them and advise them accordingly. Naturally, faculty members will be more responsive if they know the self-archiving policies for major publishers in their subject area. For instance, the academic staff from the computer science and electrical and electronic engineering would appreciate knowing that IEEE accepts the posting of the post-refereed version. We also advise on the embargo period imposed by publishers, and how to sign copyright transfer agreements so as to retain self-archiving rights.



Source: Chan (2004a)

Figure 2.  
Work team – reference  
librarians

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*Perceived benefits.* Our experience shows that once faculty members realize the impact and benefits of putting their papers on an open access platform, they will be motivated to take action. During an informal promotion session, we highlighted the access and download statistics of some papers in the HKUST Institutional Repository. We demonstrated how research papers in our IR could be retrieved by search engines, and introduced OAIster and how their papers were indexed there. Before the end of the day, five faculty members sent in their publication lists to seek our advice on which of their papers could be archived.

*Public relations.* Promotion is an important aspect of any IR project. We have to reach out to university administrators, department heads, center directors, researchers, and graduate students in appropriate ways. We published articles on the development of the HKUST Institutional Repository in library and university newsletters, and even in local and international newspapers. To keep the issues alive, we held an anniversary celebration last year when our IR topped 1,000 documents; there, we gave prizes to our top ten contributors. The event gave a social platform for us to interact with faculty members, and for faculty members to discuss the issues among themselves. In another event, a workshop on scholarly publishing, our reference librarians introduced our IR to a group of PhD students and encouraged them to submit papers. We had some immediate responses. Departmental visits have also been planned for.

We have been striving for a cultural shift among researchers so that they will develop the habit of archiving their scholarly output in the IR. After a year of e-mail announcements and promotional efforts, we have witnessed a shift of attitude among some of our faculty members from apathy to support. Campaign work will go on as long as necessary.

##### *5. Reference assistance*

As reference librarians, we are well trained to direct users to search the library catalog, proprietary databases, and the web for information. With the emergence of IRs and subject-based open archives, we should be prepared to use them as new reference tools to answer users' questions. This is perfectly illustrated by an instance at our reference counter. A graduate student approached our reference librarian for a technical report by his professor. Our colleague searched the library catalog and the professor's web site, but to no avail. Then she tried her luck in the HKUST Institutional Repository and there it was. As always, we should keep our eyes open on new trends and developments. Google Scholar is another new facility to make use of. When IRs are federated together and cross-searching among them is possible, this kind of super IR will become another powerful research tool.

A benefit of open access is that researchers worldwide will be able to tap into an institution's scholarly output. They may require remote assistance too. In April last year, we received an e-mail from someone in the UK who wanted to contact the author of a PhD thesis. It turned out that the requestor was the father of a son suffering from Ewing Sarcoma, a type of cancer. He searched the term on the web and found a thesis dealing with this topic in our IR. We acted as the intermediary and passed his enquiry to the author concerned. On another occasion, a user as far away from Hong Kong as Argentina downloaded a working paper from our IR, and he sent a question on the

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bibliography of the paper. Queries and feedback like these are good indicators to show that our IR is indeed serving its purpose.

The HKUST Institutional Repository project has placed new demands on reference librarians. We have to grapple with new skills and roles while not neglecting our current duties. We have certainly gone beyond the reference desk and library classroom to campaign for the project. This expanded role requires tact and coordination. Policy making is an old friend, but now we have to acquaint ourselves with copyright and publishers' policies. It was also a new experience to recruit content for a database "from scratch". Both are painstaking and time-consuming processes.

### **Barriers and challenges**

Summing up our two years' experience with developing the HKUST Institutional Repository, we have met with both successes and failures. Our challenges were multi-faceted, emanating from different directions: our faculty members, institution, library, and the publishers.

#### *Faculty members*

Generally, faculty members have low awareness of open access, IRs, and self-archiving rights. Their apathy and resistance undermine the success of the project. These initial reactions may dissolve through continuous advocacy. Many of them have reservations about posting the pre-published version of their papers on the web without the packaging and endorsement of traditional publishers. Some fear that research papers in IRs are likely to attract plagiarists. It is always difficult to ask for the correct versions of papers from the faculty members. They either do not reply or tell us they do not keep the requested version.

Archiving all the university's research output is the ultimate goal of the project. We realize we have made only a very humble start. Since our establishment in 1991, HKUST researchers have published over 8,000 journal articles indexed in Web of Science. Thus far, we have only succeeded in recruiting a tiny fraction of these journal papers into our repository: a total of 300.

#### *Institution*

Institutional support is vital for the sustainability of any IR. Swan and Brown (2004) conducted a recent survey on 160 journal authors. It reveals that 69 percent of them would willingly self-archive all their publications in their IRs if they were required to do so by their employers or funding bodies. We hope to see more and more institutions mandating open access self-archiving. Currently, nine universities, including the University of Minho in Portugal and Queensland University of Technology in Australia, appear on the Eprints' registry of institutions that adopt such a forceful policy (< [www.eprints.org/signup/fulllist.php](http://www.eprints.org/signup/fulllist.php)>).

At this stage, HKUST may not be ready for such a drastic step. In our view, it would make a tremendous difference if HKUST administrators could strongly encourage our faculty members to support the cause. The university could also develop coordinating policies such as funding the library and providing financial assistance to faculty members to submit papers to open access journals.

*Library*

As the HKUST Institutional Repository project has become a long-term commitment, the Library needs to seek additional funding and resources from the government or other bodies. Right now, we have absorbed all the extra duties and costs involved. The injection of funding would allow us to purchase additional equipment or software for digital content management, and release precious staff time for project work. The current mode of operation has stretched the limits of the library resources to the extent that we are forced to re-prioritize our agenda.

Looking ahead, we welcome the chance to collaborate with other institutions such as the public libraries, public records office, or non-profit organizations. We can share our knowledge and experience with those institutions which have the financial resources but not the expertise. At this juncture, the Library will need to continue its role to advocate and showcase until the culture of self-archiving takes roots.

*Publishers*

The ROMEO project identified that 58 percent of 85 publishers allowed some sort of self-archiving at the beginning of 2005. The percentage seems high but, more often than not, only a handful of articles from a long bibliography can be archived. The main stumbling block is that authors do not usually retain the correct version of their papers as required by the publishers. This has been a major source of frustration.

Commercial publishers have been understandably slow in responding to the changing landscape. In May last year, however, Elsevier took the lead by announcing that it would allow its authors to self-archive their papers in IRs (Peek, 2004). Starting from January 2005, authors of the Nature Publishing Group can also deposit their manuscripts into their own IRs six months after the original publication. These are good signs pointing towards the development of a complementary platform of scholarly communication.

**Future directions**

We have ventured into territories that a few have gone. The Chinese saying “feeling stones while crossing a river” best describes our experience. We did not start the project with a systematic strategic plan. We stepped on one stone at a time, moved onto the next, and have traveled this far. Where do we go from here?

A new scholarly communication model is in the making and reference librarians are the agents for change. We started our journey following an encouraging suggestion from Kim Douglas in December 2002. We were again encouraged in the International Conference on Developing Digital Institutional Repositories: Experiences and Challenges, co-hosted by the California Institute of Technology Libraries and HKUST Library in December 2004. The two-day conference made a stir among the attendees, especially among the local library community. We hope that more and more IRs will be set up in Hong Kong and the Asia-Pacific region in the future.

Internally, we are exploring ways to make our IR sustainable. At HKUST, faculty members are requested to report the progress of their government-funded research projects to the university administration. They need to submit a report as well as a list of associated publications to our university on an annual basis. Mining and harvesting this intellectual treasure will be the next phase of our project. We plan to campaign for

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institutional support to build a mechanism to tie in the archiving work of the HKUST Institutional Repository with the annual research output reporting system. If we succeed, we can continue the journey with firm confident strides.

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