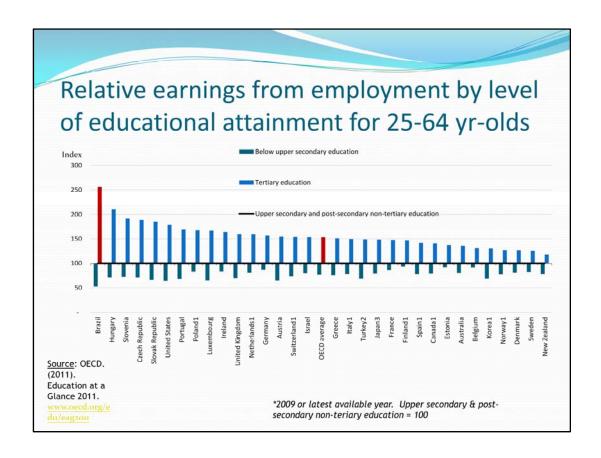


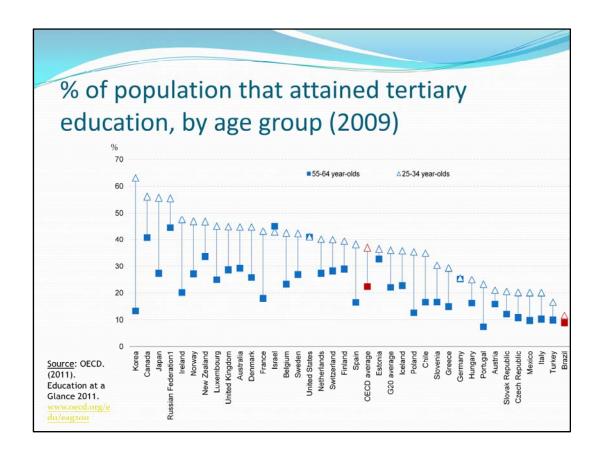
Good Afternoon. I want to look at current trends in libraries, how technology is changing what we do, and then discuss where it might lead.



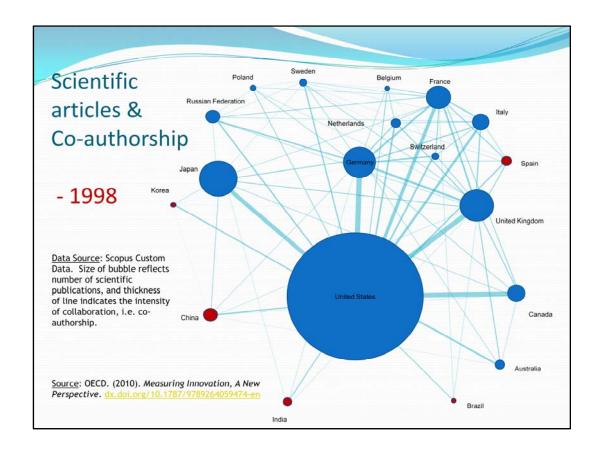
But before we look at libraries, let's step back and look at the bigger picture.



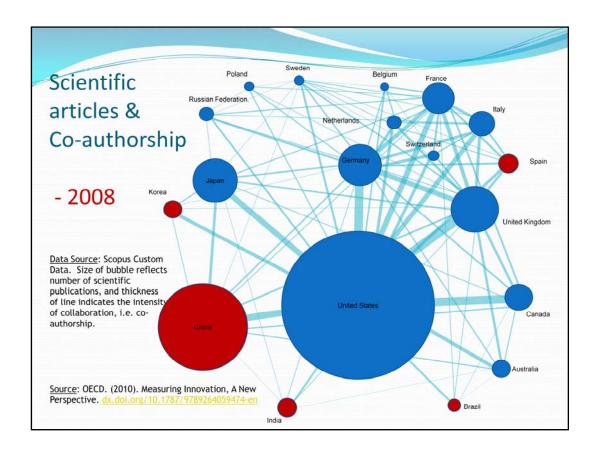
This chart is from a new report from the OECD. It shows the salaries of those with a university education, compared to those without. In all countries university graduates earn much more than those without. In Brazil, it is 2 and ½ times more. Clearly there is much incentive to get a university education.



From the same report, this chart shows that there are many more students at university than there was in their parent's generation. Squares show the oldies, and triangles the youngsters. Korea is the highest with over 60% of young people attending university. Brazil is on the same trajectory, which means that there will be many more students entering university in Brazil in the coming years.



Another OECD report, "Measuring Innovation. There are 2 charts showing 1998, and 2008. The size of bubble shows number of publications, and the thickness of the lines show intensity of collaboration. I have marked some circles in red, so that you can follow them. Brazil is here on the bottom right. Now watch the change to 2008.



Here is 2008. The big success is China. But Brazil also nearly doubled its research. I will go back again, so you can see the change.

Divinations - 5 ¢ each!

- In 30 yrs time, universities will be more popular than ever
- They will still need information, and those that purchase & mediate it.
- Machine translations will beome much more important, as the majority of published research moves away from English



Baixar o santo...

So, from these few and quick charts, I can give these divinations:

- -In 30 yrs time, universities will be more popular than ever
- -They will still need information, and those that purchase and mediate it
- -Machine translation will become much more important, as the majority of published material moves away from English.



There are those that say that libraries are in decline. I rather think that we are in a period of great change; with new growth replacing the old.



But there is no denying that we are rapidly receiving new technology, and that this technology is massively disruptive.

Journalism

- "The demise of Journalism..."
- "The Era of Newspaper bankruptcies"
- "Closures Plague Newspaper Industry"
- Rise of social media
 - Ex., Huffington Post

I think it is instructive to look at sister professions. Journalism also is also changing rapidly due to disruptive technology. Here are some newspaper headlines:

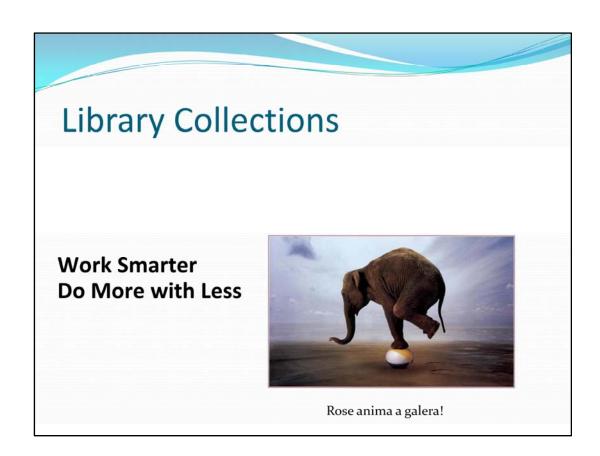
No one knows what will be the end result. Will we all become journalists through social media?

University Press

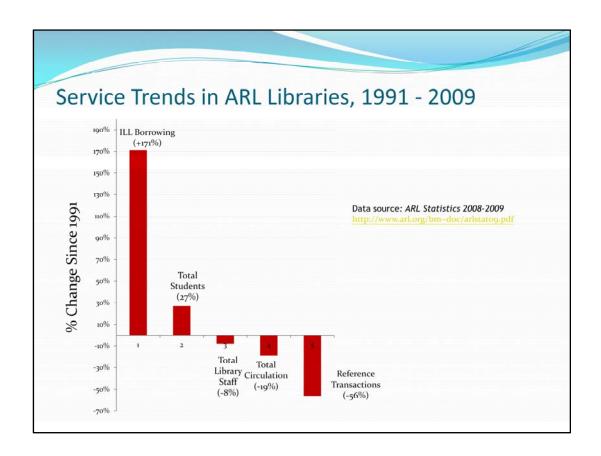
- Closed, Rice University
- Closed, Southern Methodist U
- Closed, University of Scranton
- U of Michigan, Utah State University
 - Press merges with Library
 - "... not an uncommon scenario..."
 - No print, but digital monographs

Similar to newspapers, University Presses are closing. Interestingly, some are not closing but merging with libraries.

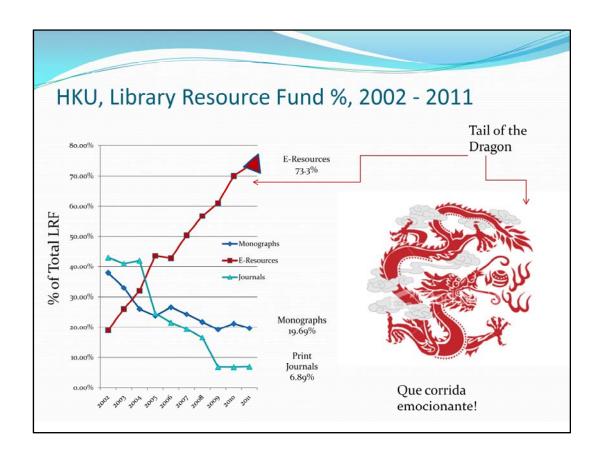
In the case of Utah State University, the Press will now aim at more digital and open access publications.



Let's look at libraries now. Year by year, it is more and more a case, of "do more with less.".

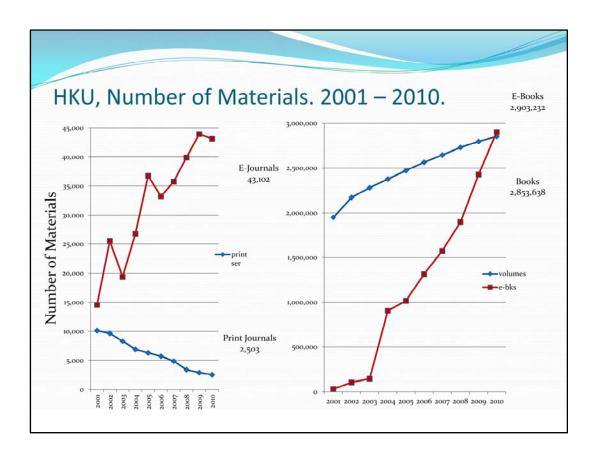


This is a chart from the Association of Research Libraries annual statistics. It shows that in this time period, ILL borrowing and number of students is up. But that the number of library staff, book circulation, and reference enquires have all gone down, and continue to go down. This is similar in most academic libraries, and also in my own, The University of Hong Kong.



At The University of Hong Kong, or HKU, the percentage of library budget spent on print materials go down every year, and the percentage on electronic materials goes up. This year it is 73.3%.

Because we are in China, we call this the tail of the dragon; meaing that when you hold onto the tail of the dragon, you will have a wild ride, and not know where it will end.

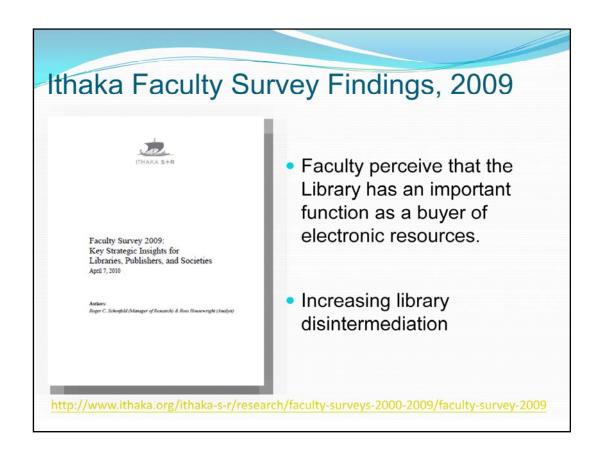


E-journals have largely supplanted print one.

The number of e-books is now at 2.9M. We now have more e-books than print ones.



More and more things are moving to the cloud. Not just content, but also services.



This survey done at Cornell University. The good news: Cornell faculty understand the important role librarians have in purchasing electronic materials. The not so good news: they also saw that there was increasing disintermediation of librarians in the information discovery process.

Other Trends

- E-books following E-journals: subscription model, not held locally.
- EJ:
 - The Big Deal for EJs.
- E-BKs:
 - PDA Patron Driven Acquisitions (PDA)
- Approval plans
- Open Access materials
- Faculty librarians are no longer selecting.
- Funding and usage have shifted/are shifting to e-materials, but staffing, building, and policies are still on traditional analogue materials

And, we have all seen these trends.

Library Space

- Too little available
- Too valuable for shelving
- "Imperative to redevelop the library as the primary learning space on campus." – David W. Lewis, Purdue University.







On top of all this, come new demands on our buildings. Library space is simply too valuable for shelving holding stacks of wood pulp.

As David Lewis at Purdue says, we must redeveloop the library as the primary learning space on campus.

We at HKU, are also building an information commons. To do this we had to move 26% of our collection, or 760,000 books, to a warehouse 3 miles away. Users can request, and get these the next day.



The Hong Kong Institute of Education

The Hong Kong Polytechnic University map

The Hong Kong University of Science and Technology map1 map2

Lingnan University

The University of Hong Kong map1 map2

HKALL(港書纲), Hong Kong Academic Library Link(香港高校國書聯纲), is a project in accelerated resource sharing jointly undertaken by the academic libraries of eight local tertiary institutions, listed in the left sidebar.

Implemented in INN.Reach software from Innovative Interfaces and running on a Sun server housed at the University of Hong Kong Libraries, HKALL is a union catalogue allowing the students and staff of the eight partner institutions to search a mega collection of over 6 million titles of monographs (11M+ volumes) held in the eight participating libraries. They can make direct requests on these materials, and have the materials delivered to the libraries of their respective institutions for further checkout, in cases where printed materials cannot be sent via HKALL, current students and staff may be able to go to that library personally to use the Item in question. Please enquire at your library's circulation desk for further details. The map links on the left hand side of this page are provided to help you get to these libraries. HKALL is unique with its large number of Chinese items, and its high number if transactions; in 2010 it had the highest circulation rate of any INN-Reach system in the world.

Each of the eight libraries has specific rules and procedures for HKALL. Please refer to the following web pages for further details.

HKALL at The Chinese University of Hong Kong
HKALL at City University
HKALL at Long Kong Raptist University.
HKALL at The Hong Kong Institute of Education.
HKALL at The Hong Kong Institute of Education.
HKALL at The Hong Kong Polytechnic University
HKALL at The Hong Kong University of Science and Technology.
HKALL at Lungian University of Hong Kong

WebPAC PRO © Innovative Interfaces, Inc.

Joint University Research Archive

- JURA
 - 8 universities in HK
 - From 2013 ~
 - 7.9M, non-duplicate items
 - Robotic retrieval

Present duplication of 8 members: 30 - 40% held by 2 or more libraries



There are 8 university libraries in Hong Kong cooperating to build a central store, called JURA.

Linked Repositories

- Portico, LOCKSS, CLOCKSS
- How many repositories are needed in the world?
- Sell duplicates to China?
- E-Bay?

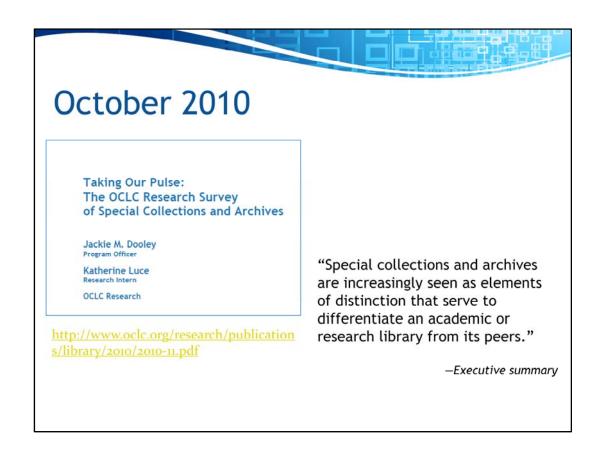


Svalbard Global Seed Bank, Arctic Circle

There are now linked repositories for ejournal content, and seeds

Many are now building similar stores, or repositories for print materials. We need to plan now, How many repositories are needed in the world? How many duplicate print copies are enough?

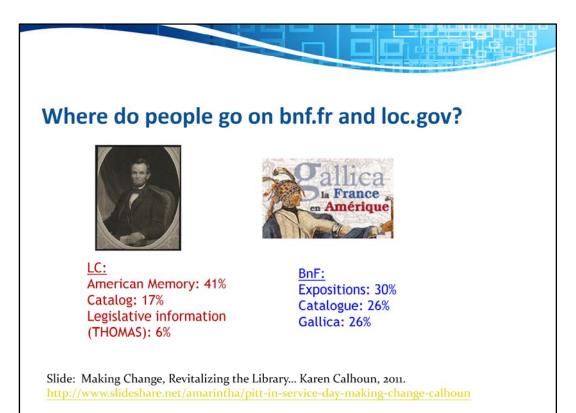
What to do with the duplicates? Cornell University Libraries sold duplicates to Tsinghua University in China for US\$895,000.



The last trend I want to observe is that of Special Collections.

This OCLC report spells out the importance of Special Collections.

When all libraries are purchasing the same materials, and have access to the same materials in the cloud, what is it that makes one library unique?



Here are some other indications that digital library special collections are attracting more attention than expected.

In the case of those who visit bnf.fr, 30% visit the expositions pages—a virtual gallery of curated exhibits around the collections. More than 50% of the traffic is split between the Bibliothèque nationale de France (BnF) library catalog and Gallica—the digital library of France.

Over 40% of the visitors to the Library of Congress web site go to American Memory, which LC describes it as a digital record of American history and creativity. Contrast this with the other two most popular destinations for loc.gov visitors—the catalog, at 17%, and federal legislative information at 6%.

The Future?

"The university library of the future will be sparsely staffed, highly decentralized, and have a physical plant consisting of little more than special collections and study areas"

Daniel Greenstein, Vice Provost for Academic Planning & Programs University of California Libraries of the Future, Sep 24, 2009

After viewing all of these trends, it is not actually hard to make a prediction of the future. Dan Greenstein at the University of California gave this one 2 years ago. It was provocative then, but now more and more, librarians are embracing this future.

The Future Library?

- 1) sparsely staffed,
- 2) highly decentralized, and
- have a physical plant consisting of little more than special collections and study areas

Sparsely staffed: because librarians have licensed vendors to provide content, functions and services from the cloud.

Highly decentralized – librarians must leave the library and become embedded in teaching programs & research teams

The Physical Plant – Of the analogue materials, only special collections remains.

"[We must] reposition library and information tools, resources, and expertise so it is embedded into the teaching, learning, and research enterprises. This includes both the human and, increasingly, computer-mediated systems. Emphasis should be placed on external, not library-centered, structures and systems.

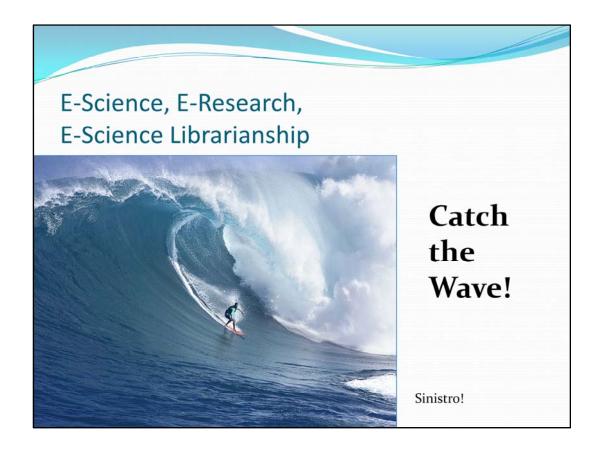
David W. Lewis
Dean of University Libraries, Indiana University – Purdue University Indianopolis.
A Strategy for Academic Libraries in the First Quarter of the 21st Century. 2007.

Perhaps Greenstein's view was overly strict. Here, David Lewis of Purdue gives us more direction for the future.

Please notice these keywords,

- -Reposition the library
- Embed our expertise into teaching and research enterprises
- External, not library-centered structures and systems.

I believe we are all moving towards this future. It will come sooner or later, depending on the type of your library, where you are located, etc. But we cannot ignore this "Elephant in the Room". We have a few years now to prepare. How shall we prepare?



Luckily, new opportunities have come, to allow the library to do just that. E-Science allows the library to,

- -Embed library services into teaching, learning & research
- develop computer-mediated systems
- collaborate with external systems and structures

<u>E-Science</u> – "e-Science is about global collaboration in key areas of science, and the next generation of computational infrastructure that will enable it." - John Taylor, Director General of the Research Councils UK, 2000(?)

<u>E-Research</u>: "E-research is the use of distributed computing resources [..] E-research facilitates collaboration and the sharing of knowledge between researchers, particularly across disciplines."

- ITEE e-Research Group, The University of Queensland

E-Science Librarianship: ".. to organize, curate and preserve [these large data sets] will require collaboration between scientists and librarians. A vital part of the developing research infrastructure will be digital repositories containing both publications and data.

- Tony Hey & Jessie Hey, University of Southampton Libraries, 2006.

[don't use]

Science → Big Science → Team Science → Networked Science

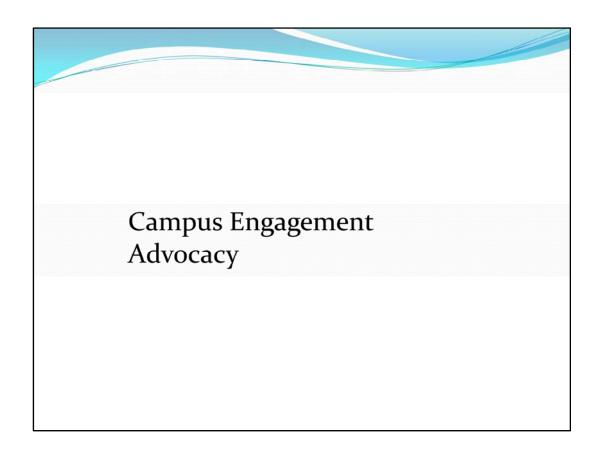
- Diana Rhoten, Social Science Research Council (UK), 2007

Library Roles in e-Science

- • Campus Engagement
 - Content/Collection Development and Management
 - Teaching and Learning
 - Scholarly Communication
 - E-Scholarship and Digital Tools
 - Reference/Help Services
 - Outreach
 - Fund Raising
 - Exhibit and Event Planning
 - Leadership

A Framework for Articulating New Library Roles, Karen Williams, 2009 http://www.arl.org/bm~doc/rli-265-williams.pdf

Karen Williams gives these new roles for librarians of e-science. For the most part, you can see that they are ones in which we already have long experience.



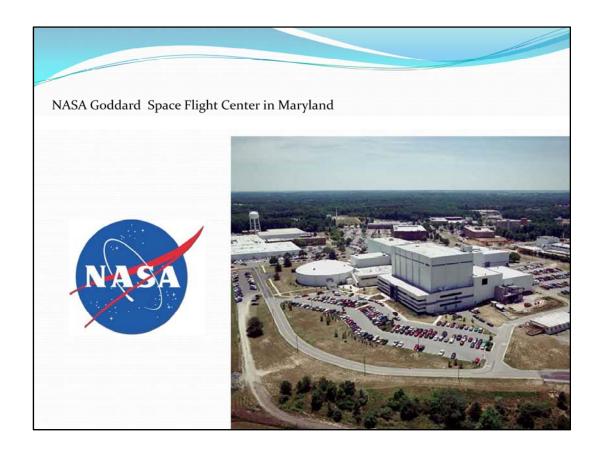
I cannot speak to all of them here, but I will speak of this one. Campus Engagement, or, Advocacy. Let me tell you a short story. It's about how an open access data archive will finally be established in Hong Kong.



In 2007, many of us wanted to spread the good work of Open Access, with a conference bringing in international speakers. I applied and received a grant from the Soros Foundation for this. In planning the program, I needed a local VIP to begin the conference.

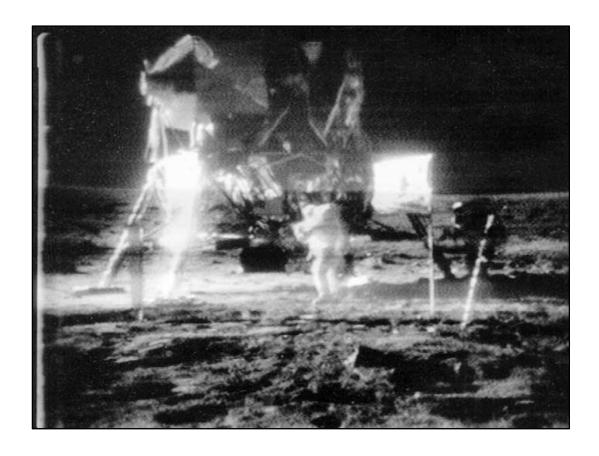


I asked this man, Prof Roland Chin, who is the Pro VC for Research at HKU, and more importantly, the Chairman of the Research Grants Council (RGC), which is the body that funds most research at the 8 universities in Hong Kong. When I asked him, he said he was terribly busy, but would agree to do so, if I wrote his speech. Happy Day! I got my man, and I got to write his speech!



But what to write? Doing a little digging in his past, I saw that he worked 2 years at the NASA Goddard Space Flight Center. And then I remembered the story of the lost tapes from the Apollo 11 lunar landing. So I wrote this story, and that is the speech he gave at our conference.

The story in summary is, high resolution video tapes were made of the Apollo 11 lunar landing. In order for them to be broadcast to televisions, they had to be converted to lower resolution.



From wikipedia, this is an example of the high resolution video.



And this is after it was converted to lower resolution.

Well, Apollo 11 was a huge success. The high resolution tapes were kept for a time, and then, disappeared. No one knows today where they are.



Perhaps they are somewhere here in this government warehouse, where boxes have no numbering or barcodes.

If the tapes were available today, researchers could go back to them and extract much more meaningful data. But we can't. Lost is lost. And no one knows when man will return to the moon.

Well, the conference was a success. But more than that, it planted a seed. The RGC has called for a proposal, and will consider this year, that will establish a data archive to serve all 8 HK universities. Part of this will be a change to the grant application & reporting process. Applicants must deposit their data sets, or explain why it is not possible to do so.



I want to bring in another concept. At HKU and many institutions, it is very relevant & similar to e-science, and again an area in which librarians have an important role to play.

Economies of developed countries are now lucky to see 2% growth a year. Recognizing the worth of R&D, many look at the academic sector as a new, largely untapped engine for further growth. Inside the academic sector and outside, people see the worth of academy in engaging with those outside the academy: industry, government, and society at large. There is the concept that the academy, which is publicly funded, should "give back" to its hosting community. There are those who say that after, Teaching and Research, "Knowledge Exchange" is the 3rd mission of the academy. The funder of all 8 universities in HK, the University Grants Committee (UGC) charged all 8 universities and funded projects for Knowledge Transfer

Similarities

- E-Science, E-Research
 - Global collaboration and the sharing of knowledge between researchers
 - inside or outside the academic sector
- Knowledge Transfer, Translation & Exchange
 - Sharing,
 - exchange with,
 - give-back to
 - the public, community, non-academic sector, etc.

Knowledge Transfer, Translation & Exchange

- Research Councils UK (RCUK)
- Canadian Institutes of Health Research (CIHR)
- Knowledge Exchange: The European Initiative of DEFF, DFG, JISC and SURF
- University of Melbourne
- (HK)University Grants Committee (UGC)
 - 8 universities in Hong Kong
 - → The University of Hong Kong (HKU)

Here are several institutions now with Knowledge Transfer initiatives. In many cases, such as the Canadian Institutes of Health Research, they have used these KT initiatives, as the bases for policies requiring open access of research and data.

My university, the University of Hong Kong (or HKU) received this new initiative and funding from UGC. HKU rewrote our mission statement to show 3 missions, Teaching, Research, and Knowledge Exchange.

Our library applied for, and was granted money for several projects in support of Knowledge Exchange.

HKU KE language

- ... to make the research and researchers at HKU highly visible and discoverable, with the goal of increasing all forms of collaboration.
- cf. SIBiUSP:
 - "As principais ações, no momento, estão concentradas em: aumentar a visibilidade e acessibilidade à produção intelectual da Universidade de São Paulo .."

30 Años SIBi http://200.144.189.88/30anos/?p=309

One of these projects, was the augmentation of the institutional repository, to also show details on HKU authors and researchers. The concept is that if HKU researchers are visible and discoverable on the web, offers of collaboration and contract research will increase.

This is very similar to language used by SIBiUSP.

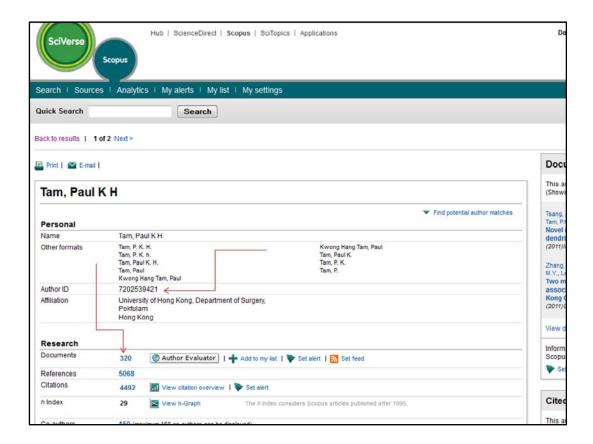


This is the Institutional Repository of HKU, which we call, "The Hub", running on DSpace.

We added ResearcherPages for each of the professoriate staff at HKU.



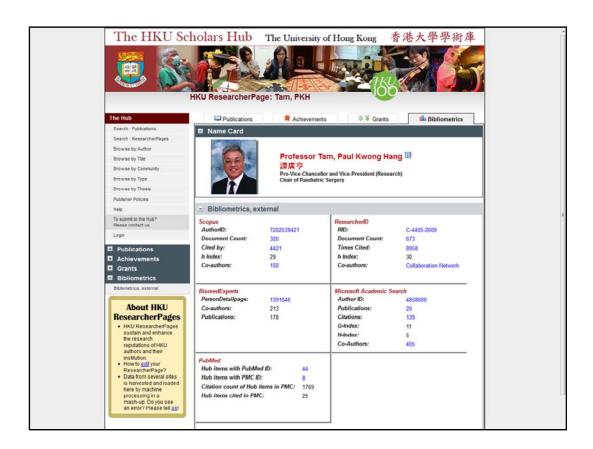
This is one of them. To build this page, we sought permission from the several data owners at HKU. We extracted, to build this mashup. There are publication details, grants, usage statistics, and bibliometrics. We had to build an authority control linking variant author names, Roman names, and Chinse script names.



Because the author entered data at HKU is dirty, we identify the corresponding author profile record in Scopus, and then download Scopus data to overlay our dirty data.



This is showing the postgraduate students that Prof Peiris supervises. Because he is famous for having isolated in 2003 the coronavirus causing SARS or Avian Flu, many students wish him for their supervisor. This page also shows theses done by these students, and where possible, links to the fulltext.



We extract this data from several sources, display here, and preserve hyperlinks back into the original data.



Because of these pages show many details on our staff, Google likes them well. Most relevant searches in Google will show the entry for the Hub at the top of the page.

Although this is good, there are many more things we can to do more our people visible, discoverable, and likely to be invited for new collaborations, and contracts.

Re-purposing information

- IRs can also be,
 - Expert finders
 - Sources for bibliometrics
 - Sources for RAEs
 - Sources for Rankings
 - Sources for Peer Review

And of course there are many other ways to use an IR. We as librarians, must actively search for them!

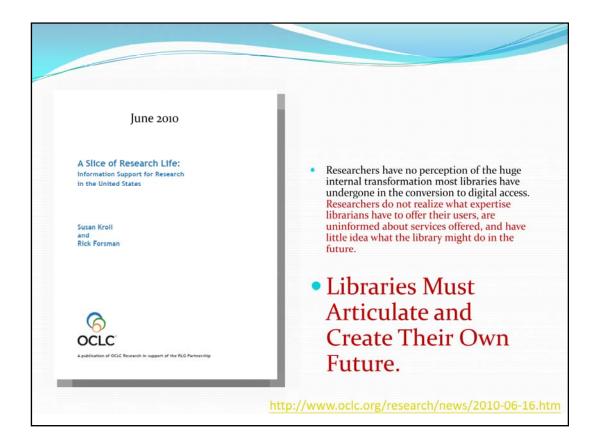
RAEs: Re-positioning the Library

- "In terms of information infrastructure, the libraries that are
 playing a central role in the research assessment process –
 particularly Australia are those which have been able to
 leverage the value of the institutional repository, which is
 typically managed and populated by librarians".
- "There is a general sense that the traditional library business of books on shelves is being consigned to the past and that librarians see their libraries as having an institutional information infrastructure role within the universities".

MacColl, J.

- Libraries should manage research outputs data at national and international scales
- Libraries should take responsibility for the efficient operation of research output repositories across research environments
- Libraries should provide expertise in bibliometrics

- Libraries should claim their territory
 - Should be more assertive...
 - Must have a voice in planning institutional responses...
 - Avoid reactive or largely clerical role...
 - Must have energetic library leadership...



And finally, this last report by OCLC.

There is no one to create our future, but we ourselves. If we don't do it, no one will.

[don't use]

Not one person reported that they visited a library. A wide variety of researchers voice their inability to create consistent and shareable metadata and their disorganized storage strategies. Yet it does not appear that they see libraries as having much to offer in any of these areas. Researchers require practical evidence of direct value of research tools and services. Academic libraries can support research by developing and aggregating discipline-based tools, providing customized services, and emphasizing user-centered services

