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Realising Research

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Editorial

The increasing sophistication of global communications systems has dramatically increased the amount of information that we can access, at work, at home, even on our phones while we're on the bus. We can now hear about what is happening on the other side of the world as it happens, wherever we are. This process has its critics; the ease of communication has increased its frequency, meaning that we now send and receive more information than ever before. So much so that useful messages get discarded as we each attempt to make sense of the onslaught of information.

Universities are, by their very nature, seething with new information. It has become a frequently stated cliché that academics will give their attention to whatever task they believe will determine an increase – or simply a continuation of – their funding, at the expense of all others. But this is true of all of us; we all use techniques to discern which information to disregard – information has to be *of use*, rather than simply *of interest*.

I was recently at the NCCPE's Engage conference in the UK where a member of the ACU Engage Community, who had come along to our session to explore the importance of international perspectives, turned to me and said 'this was really interesting; my work doesn't focus on international stuff so whilst other sessions were "for work" this one was "for me" '. I had a moment of *l'esprit de l'escalier* – unable to think of a suitable response until after the session had ended and the individual had left – so I'm using this introduction to respond to that comment. The information found in the pages of this magazine and in our Twitter feeds, at our conferences, and in our blog posts can be both interesting *and* useful to your work – the two are not mutually exclusive.

One of the best things about the ACU is the sheer breadth of experience that exists in our membership. If you can think of a new idea in higher education, chances are one of our members has not only thought of it, but is either working on it now or has tried it already. Collectively, the ACU membership can act as the world's largest higher education test site and sounding board – we can share new ideas you haven't thought of before that might work at your institution.

It is undeniable that the massive diversity that exists in our membership will also mean that the context in which one project operates will make it seem irrelevant to some members. However, there will invariably be some element of the project that is replicable in all contexts, perhaps in the way in which the project was conceived, funded, managed, approached, communicated, or reported.

While this could be seen as a simplistic guide on 'how to use the ACU', I really want to share my enthusiasm for the stories that we hear from around the world. There are a number of such excellent stories in this issue, including the way in which the University of Jos in Nigeria rebuilt their library from scratch after a devastating fire in 2013; the tales from Ghana and Malawi about how library consortia are opening access to their researchers and the community; and the new open access university press at University College London in the UK.

If you'd like to contribute to future issues of *Realising Research*, please get in touch at the address on the previous page. We'd love to help others learn from your experience and successes – or even your failures! Most of all, I hope you enjoy reading this issue.

Neil Johnson is Membership Engagement Coordinator at the ACU.

The ACU Research, Knowledge and Information Community

The ACU Research, Knowledge and Information Community is the second in a cohort of new special interest groups – known as Member Communities – to be launched by the ACU.

Aimed at all university staff who support and encourage, but don't directly engage in, the research process, the ACU Research, Knowledge and Information Community is open to staff and students at all ACU member institutions, and is free to join. Members will receive future issues of *Realising Research*, regular newsletters, access to online articles and discussion forums, and invitations to future events.

At the heart of this new Community is the involvement of its members. We want you to take part and share your experiences and expertise. We're keen to hear about your work, the current challenges you're facing, and how your university is working to overcome them. To join, visit **www.acu.ac.uk/rki** or contact **rki@acu.ac.uk**

The hidden pitfalls of effective scientific research in low-resourced settings

Has the open science agenda benefited researchers in the developing world – and does better access to information lead to improved research outputs? **Louise Bezuidenhout** discusses why it's not as simple as it may appear.

In recent years, much promise has been attached to the potential for the rapid advances in information and communication technologies (ICT) to revolutionise how scientific research is conducted. Not only are increasing amounts of data being generated, but there is an increasing plethora of ways in which data can be stored, shared and analysed. Indeed, scientific research is sometimes said to have entered into an ICT-driven phase in which access to online resources is fast becoming a defining element of effective scientific research.

This 'data-centric' paradigm has also been influential in changing the underlying structures of science, and in redefining key issues such as how the benefits of research can be understood. Increasingly, there are calls to ensure all resources – especially publicly funded research – are made open to the public and available for reuse. Under the umbrella of open science, a diverse range of initiatives have been established to promote openness in published work (open access), data, software, methodologies and educational resources. Key to these initiatives has been the core belief in the need for a more egalitarian distribution of online resources that overcomes resources, borders or regional barriers.

While the open science movement has been met with widespread enthusiasm, many challenges continue to exist. How to adequately address issues of ownership and credit, privacy and harm are some commonly recognised challenges. Moreover, and of particular importance to the developing world, the issue of how to ensure resources can be equally accessed and used is coming under increasing scrutiny – in effect, how to overcome the limitations that the digital divide places on resource usage.

Addressing the digital divide

Without open data policies, it is not possible for developing countries to close the digital divide (CODATA-PASTD 2015).

The open science revolution has widely been heralded as a key driver in efforts to stimulate research in low and middle income countries (LMICs). It is widely anticipated that greater access to online resources will assist LMIC scientists in overcoming the limitations of their low-resourced research settings, and facilitate research capacity building within these countries.

The various movements falling under the open science umbrella have had varying degrees of support. The open access movement, in particular, has been very engaged in addressing current informational divides between high income countries and LMICS. The success of negotiated access and fee waivers for journal articles in stimulating research is widely appreciated. Similar successes are anticipated from both open data and open software initiatives.

Doing research 'on the ground'

Any brief analysis of open science initiatives highlights the strong egalitarian principles that underpin the movement. However, the resultant focus is on the *provision of resources*, rather than the *ability to use* these resources in practice. In attempting to address this distinction, myself and colleagues from the University of Exeter (UK) undertook a Leverhulme Trust-funded project to look at exactly how the increasing availability of online resources translated into research outputs in LMICs. To do this we conducted embedded ethnographies in four laboratories in sub-Saharan Africa. From the data collected, the project identified a range of systemic issues that hinder scientists from making use of available online resources – both as contributors and users of data.

In effect, this embedded fieldwork highlighted that it was not necessarily the availability of online resources or research funds that slowed down (or stopped) research in these contexts, but rather daily, systemic – and very innocuous – aspects of the research environment that derailed improved capacity. These issues related to not only the physical research environment, but also the social and regulatory aspects of the research environment. A number of these issues are detailed below.

Access to ICT

In most discussions, the main concern is that researchers do not have access to adequate ICT or the internet – either through the absence of provision, or lack of computers and software. In our ethnographies, however, participants identified a number of other issues that played a significant role in their ability to use online resources. These included:

- Needing to buy equipment with personal funds, particularly computers and software. Researchers were often using older, less powerful computers and running older versions of software.
- Lack of trained technicians and a lack of assistance with problems affecting personal computers.
- For younger researchers and postgraduate students, the cost of buying data (or funding internet access) to be online

when off campus was considered prohibitive.
- Many of the universities we visited did not have working proxy servers, and researchers were unable to access library resources off campus.

Generating data to share

In many discussions about building research capacity in LMICs, the focus is on providing project funds. In contrast, however, many researchers that were interviewed highlighted that the availability of research funds was just one of many problems they faced when generating data. Others included:

- The problems associated with the ordering and delivery of materials – due to customs, these things can take up to six months to arrive.
- Lack of trained technicians to service and repair laboratory equipment, and lack of specialist equipment.
- High teaching loads, curtailing the amount of time that could be spent on research.
- High numbers – and high turnover – of postgraduate students, making the development of cohesive research streams challenging.
- Lack of ability to access funds to upgrade the physical laboratory environment – such as rewiring, redesigning and refitting laboratories.

Reusing online resources

Many discussions centre on improving the availability of online resources. In contrast, many researchers emphasised a range of other critical issues they feel impact their ability to use online resources. These include:

- A lack of mentors and discussion within the academic community, and training in the area of online research.
- Minimal awareness of the available resources – many were not even aware of the open access agreements their library held.
- Restrictive internal promotion criteria, meaning the focus for most LMIC scientists remains on the publication of a peer-reviewed journal article – with little to no recognition for innovative data sharing or usage initiatives.

This list of problems highlights two important considerations. First, the scientists interviewed did not fit well into binary categories such as online/offline, or access/no access. Instead, they were experiencing a state of 'lowered access', which can be difficult to discuss because of the current open science discourse. Second, many of the issues that significantly affect researchers' ability to engage with open science are not to do with access to resources, but rather relate to systemic issues within their research environments. Openness, it seems, cannot – and should not – be considered separately from the research environment.

Access to information: more than being online

It is apparent that the issues that have the most influence on scientists' ability to produce, share, and reuse data were seemingly innocuous elements of their research environment. Yet these issues, while often not entirely derailing research, slowed it down, made it more difficult, and hindered dissemination and creativity.

What is also apparent is the predicament many LMIC scientists find themselves in when attempting to improve their research outputs. The majority of these issues are not covered by project-specific funding as they are deemed 'core maintenance issues'. Yet, many research facilities in LMICs have little – or no – core funding due to a lack of dedicated government funding. Moreover, for many low-resourced research environments, these issues are often deemed too trivial or embarrassing to draw attention to, causing scientists to miss out on potential avenues for overcoming these problems.

The results of the Leverhulme project raise the possibility that current discourse surrounding open science and low-resourced labs within LMICs is too simplistic, and that access to resources is only the start of the battle to close the research divide. Indeed, an egalitarian focus on access to resources can often mask deeper underlying issues that poorly resourced physical research environments, poorly articulated social research environments, and a lack of government involvement can cause.

In contrast, we suggest adapting current models of poverty and development – such as the human flourishing index and the capabilities approach of Amartya Sen – in order to provide a more nuanced understanding of current successes in open science, and to identify what still needs to be addressed in terms of LMICs. This will shift the focus from the availability of resources to the scientists' ability to use the resources – and thus provide a space in which the pitfalls of low-resourced research environments can be discussed.

The results of the Leverhulme project draw attention to three important considerations:

1. Increased provision of resources should not be automatically correlated to potential research outputs. More attention needs to be paid to how researchers are able to effectively use online resources within their research environment.
2. Greater attention needs to be given to ways in which research environments can be maintained and upgraded.
3. Funding and governmental bodies need to consider alternative means to stimulate research. While project funding is important, it is possible that a lack of alternative funding – particularly directed towards facility maintenance – can keep researchers in cycles of dependence and curtail research capacity in these regions.

Only through recontextualising discussions about data can effective initiatives be designed to assist scientists in avoiding the hidden pitfalls of low-resourced research environments.

Dr Louise Bezuidenhout is a Research Fellow at the University of Exeter, UK.

Belonging to an academic library consortium

Access to academic publications and research is an ongoing issue in many countries across the developing world. **Kondwani Wella**, **Patrick Mapulanga** and **Theodosia Adanu** share their experiences of how joining forces can increase equitable access to these essential resources.

Access to global research and academic writing is severely limited in many developing countries. In recent years there has been an increase in the establishment of library consortia, where a group of libraries and research institutions in developing countries negotiate together for access to electronic resources.

Online journals are rapidly replacing paper-based journals, which have a limited circulation and take time to publish. Digital journals are therefore a key electronic resource for developing countries, enabling them to keep abreast of research developments by accessing recent publications at affordable prices.

According to Ahmed and Suleiman (2013), consortia arose 'as a practical and economical way to facilitate information exchange and collection sharing among libraries', mitigating the high costs set by publishers. This collaboration ought to be mutually beneficial to all members.

History

In 2001, the International Network for the Availability of Scientific Publications (INASP) established the Programme for the Enhancement of Research Information (PERI). This programme paved the way for the establishment of our respective library consortia: the Consortium for Academic and Research Libraries in Ghana (CARLIGH) and the Malawi Library and Information Consortium (MALICO). Both have now been operating for over a decade and were established as a result of a long-term search for a sustainable model for providing university researchers with much-needed scholarly literature.

Negotiations lead to cost savings

Negotiations are carried out by a few for the benefit of all – the consortium takes responsibility for liaising with publishers on behalf of all members, preventing a situation where many different voices are negotiating for the same resource. This results in each member of the consortium getting the same value for money.

One other big gain is the financial benefit of paying relatively fewer dollars per institution for many resources. If it were not for the consortium, it is estimated that libraries in Malawi would each need to find over USD 580,000 in their annual budgets to subscribe to the necessary e-resources. Through the consortium, libraries in Malawi pay between 2-10% of the actual value for the e-resources. This means that libraries in Malawi have access to e-resources at almost a 90% discount from the publishers.

In addition to the advantage of negotiating as a group, the consortia cut down administration costs. There were some resources, like SabiCat and EZproxy, that the University of Ghana (UG) had acquired to enhance work and facilitate the provision of research information. These resources are now available at the consortium level, where the payment is managed centrally, saving UG the task of administering the payments. In addition, the request for usage statistics is carried out centrally by the chairperson of the e-resources committee. This saves UG the hard work of going through the process.

The downside to a few acting on behalf of all, however, is that staff at most consortia member institutions do not gain the experience of interacting with major publishers, unless they are able to develop these relations in other ways.

Training

While there may be fewer opportunities for staff to develop their experience of negotiating contracts, there are numerous capacity building training sessions facilitated by the consortia. Members of CARLIGH and MALICO have benefited from a variety of workshops, on topics including monitoring and evaluation of electronic resources, bandwidth management, information literacy, the creation of institutional repositories using a variety of software options, licensing and negotiations, library marketing, and advocacy.

Members of the consortium have benefited immensely from these workshops, which are organised centrally by the consortia and conducted by international facilitators drawn from professionals in Africa and beyond.

Infrastructure

One of MALICO's objectives at its formation was to develop adequate ICT infrastructure for members, especially sufficient internet bandwidth. From 2013, MALICO has been involved in the AfricaConnect initiative.

Public libraries and research institutions in Malawi have been contributing financial resources towards AfricaConnect, which aims to establish a high capacity internet network for educational and research institutions in southern and eastern Africa. It is anticipated that through the initiative, internet costs will be heavily reduced from a monthly bill of around USD 4,000 to around just USD 135, though it is hoped that it can be reduced further to around USD 85 per month, which would represent a total saving of over 97%. This will be a huge boost to education and research networks and libraries in Malawi.

Credit: MALICO

Installing a satellite dish at one of the University of Malawi's colleges

In addition, MALICO has also been working with the National Library Service and National Commission for Science and Technology on the Malawi National Digital Repository (NDR). The NDR is among the projects that has deployed Dspace to manage research in Malawi. This repository provides open access to research on Malawi, and research done by Malawian researchers in a range of different subjects. This has allowed Malawian scholars to have easy online access to important research, policies, and other government documents

Advocacy

The consortia are also able to draw on the expertise and collective experience of their members to inform institutional and governmental policy that will affect universities across the country.

Since early 2010, MALICO has worked with the Copyright Society of Malawi on issues of intellectual property and copyright law. MALICO also worked with the Parliamentary Committee on Education on certain aspects of copyright law in Malawi which prohibit and impinge on freedoms that libraries ought to have regarding copyright and fair use of materials. The effect of the interaction with the Parliamentary Committee on Education is likely to be felt when the Copyright Act for Malawi will be revised in the near future. In 2015, MALICO also worked with the not-for-profit organisation Electronic Information for Libraries on open access policies for Malawi. Public and private institutions are now adopting the policies for institutional use.

Networking

CARLIGH members benefit from formal and informal avenues to discuss, share, and solve common problems. For example, UG belongs to a WhatsApp group that was set up for electronic resources librarians, where discussions are held for the good of member institutions. This is a helpful forum because it serves as a quick way to give support to each other. In addition, experienced institutions, such as UG, are available to help newer institutions and share knowledge acquired over the years in dealing with electronic resources in general.

The downside

It is important to recognise that membership of a consortium is always 'give and take.' Resources may not all be beneficial to every single member.

Negotiating as a block can result in various time delays, which can cause certain issues and result in tensions within the group. UG faced one such instance when access to a particular resource came to an end because of a sudden increase in price. The consortium was not happy with the proposals being offered and there was a delay in arriving at a decision. The university had to take a decision as researchers began pressuring the institution to act. To the disappointment of the consortium, UG opted to accept the offer, thanks to available external funding, to forestall the 'wrath' of its researchers. Thankfully, a consortia arrangement has now been reached, which in turn has cut the cost of the resource for UG. Negotiating as a block will always be preferable, however, when the group decides to withdraw resources it can have implications for researchers at those institutions that make use of it.

However, every member is allowed to make suggestions for the acquisition of resources, and all are involved in the final decisions for purchase. Efforts are made to satisfy (to a large extent) the diversity represented in the consortium. Although we may hope that all requests will be met, it is simply not possible. Sometimes, individual institutions have to sacrifice individual interests for the benefit of all. Library consortia have enabled the systematic and effective coordination of resources for improving services to library users.

Conclusion

A lot has changed since our two consortia were established. The consortia have played a crucial role in increasing subscriptions to electronic resources. The simple fact that membership of the two groups has greatly expanded over the years shows that CARLIGH and MALICO offer great benefits to their members.

In the face of these benefits, any challenges pale into insignificance.

Further reading

M.H. Ahmed, R.J. Suleiman, *Academic Library Consortium in Jordan: An Evaluation Study* (2013)

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Patrick Mapulanga is Assistant Librarian at the University of Malawi.
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The Nurse review: what next for UK research councils?

Will the UK government's review of research councils lead to positive change for the higher education sector? **Richard Black** gives his views on the possible implications.

In December 2015, the UK government published the long-awaited report of the Nurse review, titled *Ensuring a successful research endeavour*. Eminent scientist Sir Paul Nurse led a review team, that was tasked with looking at the UK's research councils, which have responsibility for funding 'demand-led' research across seven broad discipline areas. The review also had high-level input from government and the scientific community.

So what does it say, and how will the UK's research funding landscape change in its wake?

An already-evolving system

When Sir Paul's review was first announced at the end of 2014, there were arguably few reasons to be optimistic about the future of UK research funding. Science funding had been 'ring-fenced' under the then coalition government's plans, but was declining in real terms. 'Blue skies' research seemed almost forgotten in a tide of research council priorities, themes, and special initiatives. With the emphasis on STEM, the future also looked particularly bleak for the humanities – a problem in many countries, but particularly so in the context of weak public spending on higher education.

Worse still, the UK research councils in particular had suffered significant budget cuts in recent years, leading them to pass an increasing array of costs onto universities. Thus all grants were already subject to 'efficiency savings'; so-called 'demand management' had sought to shift the burden of peer review away from the research councils and onto universities themselves, while 'doctoral training partnerships' had passed most of the administrative costs of PhD support back to the universities that provide the training.

With the election of a majority Conservative government in May last year, the appointment of management consultants McKinsey & Company to conduct a separate 'review' of research councils over the summer, and a new spending review in the autumn, you would be forgiven for thinking that the days of independent UK research councils were numbered.

Yet three months on from the publication of Sir Paul's report in December 2015, and despite the announcement of a new research body – Research UK – the research councils are still with us. Not abolished, they are to become more like 'faculties' in an umbrella structure.

The good…

So how should we view the Nurse review, and what does the future look like now for UK research?

Certainly there is much to commend in Sir Paul's review. For a start, we can probably never be reminded too often of the importance of research, and there is much in the report that stresses this. In particular, Sir Paul emphasises the need for research funding decisions to sit above the short-term funding priorities of politics and public opinion. He makes an important point in his invocation of the 'Haldane principle' – that decisions about funding should be made by those with the expertise and experience to know where it will be best spent.

Moreover, Sir Paul has clearly not sought to abolish the UK's research councils. Indeed, he makes recommendations about how the research councils should continue to provide 'scientific leadership', as well as taking the lead on engaging with a range of stakeholders, including the commercial world, government, charities, and Europe.

The true story of a successful UK research endeavour in the future will be one where the UK's contribution to global knowledge and understanding continues to grow.

This in itself is perhaps a major achievement of the report – on efficiency grounds alone, there must have been many in the UK Treasury who were calling for a single research council, with a massively slimmed-down structure and simplified mechanisms for distributing research funds, based perhaps on some metric formula. Instead, we will continue to have the same number of research councils as before, each responding to the specific interests and concerns of their own scientific area, each with a ministerial appointment for its CEO.

The bad…

Yet it seems to me that there is little cause to cheer this quasi-status quo. What is wrong, and what could be done about it?

First, Sir Paul has recommended the creation of an overarching body called Research UK to bring together the strategic side of our research councils, with direct access to government and its own chief financial officer. This might have some positive effects, but it seems highly unlikely that it will deliver any more finance to support research in the UK.

Unfortunately, that matters – just a decade after devising 'full economic costing' (or FEC) as a mechanism to properly estimate the cost of research so it can be adequately supported, funding levels are increasingly precarious. Now, the new mantra from

government, including the research councils, is 'matched funding' or 'contributions' from universities, in which institutions are expected to contribute funds from their resources grants – the same grants that are provided by the government.

Yet this is simply a device that ensures nobody receives full funding. It implicitly favours large institutions that can generate surpluses over smaller ones. My own institution would struggle, for example, to find the 50% match funding for PhD scholarships that the Arts and Humanities Research Council (AHRC) is currently consulting on. And even if we could find such funds, we might ask whether so much of our own money should be devoted to the priorities of a UK research council rather than our own priorities. For example, the AHRC expects us to use this funding only for British or European students, whereas our priority is to recruit and train the best international talent.

And that leads to a second point: the problem that Research UK will inevitably exacerbate is the divide that is opening up in the UK between research and teaching. It could be argued that one of the key strengths of UK higher education – the thing that attracts academics and students from around the world to work and study in the UK – is the way our research intensive universities combine the best of research and teaching and exploit synergies between the two.

Yet this is rapidly eroding, at a time when – more than ever before – universities will in practice need to cross-subsidise research from teaching income in order to make up the shortfalls in research funding.

To be clear – such cross-subsidies *are* justified, at least in moderation. An inspirational teacher at tertiary level needs to *know* the research frontier in-depth – he or she needs to work on research and be able to ask and solve crucial research questions. Excellent teaching cannot be delivered consistently if the information being imparted to students, or the problem-solving skills being shared, have only been learnt second-hand.

Yet Research UK, with its constituent research councils (and quite possibly incorporating core funding as well), but separated from an Office for Students, does not look likely to stand up for synergies between excellent research and teaching. On the contrary, it looks likely to enhance the sense of conflict between the two.

… And the ugly

Finally, what about the 'wider research endeavour' that is the subject of the third of Sir Paul's four chapters? Interestingly, much is said about connections with business, and quite a bit about connections with government. Yet in spite of the correct observation that 'openness to scientific strengths beyond the UK is one of the defining characteristics of the UK research base', the report says little about how international connectivity could be strengthened further.

This is a serious gap. Working across borders is one of the success stories of science and scientists in the past two decades, and not just in the UK. The UK in particular runs a trade deficit in manufacturing, yet this is dwarfed by our trade surplus in services – a surplus that rests in part on the excellence of our higher education institutions, including their research.

The true story of a successful UK research endeavour in the future will be one where the UK's contribution to global knowledge and understanding continues to grow. This is an area in which UK universities' performance – despite chronic underfunding – has arguably been little short of outstanding. But it remains to be seen whether the new-look research councils can continue to deliver the same in the future.

Professor Richard Black is Pro-Director Research and Enterprise at SOAS, University of London, UK.

Research funding across the Commonwealth

The UK's approach to research funding has attracted interest from around the Commonwealth, with international observers using the results to inform their approach.

Australia

Informed by the UK's Research Evaluation Framework, in 2012 the Australian government undertook the Excellence in Innovation for Australia (EIA) impact assessment trial to determine how impact metrics could be integrated into the funding process. In July 2015 Dr Ian Watt undertook a review of the funding process in order to 'enable Australia's high quality research to be translated into economic and social benefits for the nation'. The recommendations from this report have informed new changes that streamline funding streams and place an equal emphasis on industry and 'end user' engagement on research quality. Consultations will take place throughout 2016 before the changes come into effect on 1 January 2017.

Malaysia

The recently drawn-up Malaysia Education Blueprint 2015-2025 sets out a wide-ranging checklist of changes for its higher education system, including continuing the improvements in the nation's research base. As with the Australian example, Malaysia is looking to improve engagement with end users but, unlike Australia, Malaysia places a heavy focus on engaging with government and local communities as well as industry. In the immediate future this entails 'redesigning financing criteria for research grants and enhancing grant review and monitoring process'.

Ashes to beauty: the story of the University of Jos library

When a fire broke out at the University of Jos library, it could have spelt disaster – but instead it led to a new beginning. **Stephen A Akintunde** explains how the university overcame the damage to create a positive legacy.

The University of Jos is one of Nigeria's 141 universities. Located in central Nigeria, it was established in 1971 as a campus of the University of Ibadan, but became an autonomous institution in 1975. In 2013, the university received a grant to carry out renovation of the library's roof, which had been leaking for some years. The renovation work was to take place a few months into the rainy season. The library administration was faced with the option of removing every single book and storing them in a safe place to ensure smooth movement during the reroofing, and also to avoid possible rainfall, or keeping the books on the shelves and risking exposure to rain and building debris. We decided to take the books off the shelves, and keep them in a corner in the library, together with the computers from the laboratory and library staff offices.

Meanwhile, the library shut down for the period of the renovation, with staff relocating to other branch libraries and the Directorate of Information and Communications Technology.

During the renovation process, a fire engulfed the computer laboratory, the circulation area, the reserved books, and several furniture and card catalogues, causing significant damage and making it a much bigger job than we had originally expected.

> 'What attracts me to the library is the new setting. Before now, I was not really a fan of the library, I just came here when I felt I didn't really have any option; but now, looking at the new interior decoration and the internet availability and the light, it is just so attractive. To me, it makes me feel I am in a conducive environment, the right place.'
> ***Natural Sciences student***

What next?

The contractor working on the site when the library went up in flames agreed to complete his work on the roof, and fix the walls and floor of the burnt area. However, the furnishing, bookshelves, books, journals, and computers needed to be replaced, which required a large amount of funding, and neither the library nor the university administration had any idea where to source it.

The matter of staff motivation was also critical; many became discouraged after the inferno because their computers, offices, and other facilities were no longer available. It was therefore necessary to recognise how the fire had affected staff, and take steps to replace their equipment and boost their morale.

The fire had a huge impact not just on the university buildings, but also on the people who worked and studied there, leaving empty spaces both physically and emotionally.

Fire damage in the computer laboratory, which destroyed 140 computers

Making the best of a bad situation

While the library space was waiting to be filled, some creative opportunities emerged: the library's 'empty' space was turned into public space, becoming a natural environment for exhibitions.

Two exhibitions were held: ancient manuscripts from the Manuscript Research Group in the Department of Religious Studies were displayed in January 2014, and a fine arts exhibition, organised by a lecturer in the Department of Fine and Applied Arts, ran in April and May 2014. The ancient manuscripts exhibition displayed a very rare collection of ancient biblical scrolls that had never been seen before. The library also observed Open Access Week in October 2014, where staff and students discussed the benefits and challenges of open access. Library staff also used the empty space to hold staff seminars and meetings.

The library staff seminars had been a regular feature, enabling professionals to discuss their work experiences and areas of research. It was resuscitated in January 2014 after being dormant for some years – an opportunity afforded by the new space in the library. This has helped refine the academic status of librarians in the university.

> 'I have been at this school for a long time, but the library was never my priority. But recently, the library has taken a new look and you feel like keeping coming because the environment is quiet and makes you want to read in the library for longer periods.'
> ***Medical student***

Apart from the seminars, the library administration also organised a cultural retreat in April 2014 for all professional and paraprofessional librarians in order to reorientate staff for efficient service delivery in a new environment and with new leadership. At the end of the retreat, over 80% of staff reported their enthusiastic support for the coming changes and determination to forget the past, move forward, and be productive.

Many library patrons have commended the attitudes of staff in a survey of library users, with over 90% of respondents leaving positive comments like 'library staff are warm and helpful', 'library staff are friendly', and 'the library atmosphere is good for reading'.

'This new library – the sight, the environment as you enter the open space, the light, the chairs, and the way every other thing is well arranged – there is a message that drops into you, that prepares you to read, that encourages you that you are in the library to read.'
Final year Medical student

Help from above

While the university administration was brainstorming how to raise the funding to restock the refurbished library, some good news came in November 2014. The university received two special grants from the Tertiary Education Trust Fund (TETFund), the national funding agency which distributes publicly collected funds in Nigeria. The university's vice-chancellor announced that he was allocating both awards to the library so that academic activities could resume as soon as possible. He added that he looked forward to a new, modern library.

Meanwhile, in anticipation of the eventual movement of the library materials to the new facilities, the vice-chancellor had, a year earlier, set up a committee to prepare a remodel of the permanent library building. That committee, in its report, recommended a redesign, creating a truly modern library that meets users' needs. During this process, I suggested a creative learning space for staff and students to sit alongside the traditional repository.

The new learning space, commissioned in April 2015, is a learner-centred flexible space with facilities for full engagement of the learner. It is physical space that is supported by technology. The physical space has two portions: the open space, and the reading space. In the open space, the furniture has been designed in such a way as to facilitate group and individual needs, including relaxation. In the quiet reading space, the furniture is conducive for personal concentration, and can accommodate both individuals and groups. Technology supports access to electronic resources, both the internet and electronic databases and books.

The space also provides opportunities for patrons to charge their mobile devices such as laptops, tablets, and mobile telephones; this has been discovered to be a major need of patrons. The library has an alternative power supply which compensates for the poor supply of public electricity in Nigeria. The electric sockets make the library a particularly attractive place for many students. The emphasis in the learning space is therefore on learner preferences.

The new open space used for reading, group discussion, and internet access

Conclusion

The University of Jos Library has come out of a bad situation for the better. The renovation process which resulted in the destruction of parts of the library provided opportunities to refocus staff and redesign the library. The new learning space has become a central meeting space for the academic activities of students and staff on campus. An increasing number of patrons now visit the library – more than ever before, with head count statistics jumping to the tens of thousands.

Feedback from patrons shows that the new learning space provides facilities that meet learners' individual and group needs. The library can only improve as it looks at the future. The eventual movement to the permanent library promises to be an even more creative adventure, as the library improves its facilities and services. The University of Jos experience demonstrates that the library's role in creating a culture of learning remains critical.

Dr Stephen A Akintunde is University Librarian at the University of Jos, Nigeria.

Supporting research integrity

What is research integrity and what role do research integrity networks have in supporting the agenda globally? Here, **Zoë Hammatt** and **Loc Nguyen-Khoa** share their experiences from the US Office of Research Integrity.

Research integrity is a relatively new concept which has emerged in tandem with the evolving global research environment. In principle, research integrity centres on whether research is accurate and honest and can therefore be trusted. Integrity applies to the entire research process, as well as its results as they are reported to the research community and the general public. Are those conducting a study complying with pertinent regulations, as well as ethical guidelines and codes of conduct? And can the intended audience(s) and general public place their trust in what is being presented to them?

American approach to research integrity

In the late 1980s, the American approach to research integrity emphasised the prevention of research misconduct through training in the responsible conduct of research (RCR), which covered nine core topics:

- Research misconduct
- Human subjects protection
- Animal subjects protection
- Conflicts of interest
- Mentoring responsibilities
- Peer review
- Collaborative science
- Responsible authorship and publication
- Data management

Several US institutions soon expanded the scope of RCR training to include topics such as financial stewardship, social responsibilities, and environmental protections.

Exploring research integrity on the global stage

In 2007, the European Science Foundation and the US Office of Research Integrity (ORI) partnered to launch the World Conference on Research Integrity (WCRI) in Lisbon, Portugal, to explore issues related to research integrity on an international scale. Since then, WCRIs have been held in Singapore (2010), Montreal (2013), and Rio de Janeiro (2015), with at least 50 countries represented at each meeting. The fifth WCRI will be held in Amsterdam in May 2017. The WCRI has convened representatives of institutions, research funding agencies, professional societies, publishers, and governments around the world to explore research integrity topics in a global context.

In 2010, the second WCRI released the 'Singapore Statement', which articulated guiding principles (honesty, accountability, professional courtesy, and good stewardship) and 14 responsibilities of researchers and research institutions. The third WCRI resulted in the 'Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations', which acknowledges challenges to addressing research integrity on a global scale. The Montreal Statement notes:

'[International] collaborations present special challenges for the responsible conduct of research, because they may involve substantial differences in regulatory and legal systems, organizational and funding structures, research cultures, and approaches to training. It is critically important, therefore, that researchers be aware of and able to address such differences, as well as issues related to integrity that might arise in cross-boundary research collaborations.'

What is clear from the past 30 years is that the definition of research integrity continues to evolve and the desire to promote the responsible conduct of research continues to expand beyond any one institution or country.

The topic of research integrity has generated political and public attention more recently in countries in Asia and the Pacific. In the past few years, dignitaries from China, Japan and Australia have visited ORI to learn about its educational programmes and processes for handling research misconduct allegations. In February 2016, 63 representatives from 13 countries attended ORI's 'Research Integrity in Asia and the Pacific Rim' meeting to increase awareness of US research regulations and discuss research integrity issues specific to countries in the region. The meeting also facilitated the creation of the Asia Pacific Research Integrity (APRI) network as a springboard for sharing knowledge and resources within and across countries in the region.

The WCRI meetings and the ORI's meetings with Asia and the Pacific Rim representatives have helped elucidate challenges inherent to fostering research integrity in an international research environment.

Challenges of investigating research misconduct

When alleged research misconduct occurs, US federal agencies follow different regulations and processes for handling allegations at both the institutional and federal level – which can lead to various challenges. In the US, funding for behavioural and biomedical research comes from a number of sources, such as the National Institutes of Health (NIH), the National Science Foundation, and other public and private funders – and each of these sources enforce different reporting and training requirements. Institutions that apply for or receive funding from multiple sources must have adequate policies and procedures in place to meet each funders' diverse requirements. Without these, the integrity of the research could be called into question.

At the fourth WCRI in Rio de Janeiro, ORI gave a presentation titled, 'US Public Health Service Funds in an International Setting: Research Integrity and Compliance', to share data on the global

Delegates at an Asia Pacific Rim Integrity (APRI) network meeting

distribution of NIH grant awards, research misconduct policy, and the reporting requirements that must be adhered to when accepting these awards. To delve more deeply into these requirements and explore diverse approaches, ORI partnered with research integrity experts from Australia, Canada, China, Denmark and Norway to organise a workshop on handling allegations of research misconduct in a global context. The session was attended by more than 100 delegates and offered practical tips for handling allegations in diverse settings. In roundtable discussions, delegates noted the lack of common definitions for research misconduct and the universal need for ensuring fairness and accountability in proceedings, notifications, and reporting of breaches of research integrity.

Challenges in meeting research integrity requirements at the international level are further amplified by variance in national laws, codes of conduct, and policies and processes. One example is the enforcement of Department of Health and Human Sciences requirements for handling research misconduct allegations at institutions outside the US. The US regulation (42 CFR Part 93) requires collection of evidence when certain criteria are met. At non-US institutions, this process may be complicated by the existence of conflicting local laws and institutional policies related to evidence collection and data ownership. Although non-US institutions may have policies in place to comply with US regulations in cases involving US research funding, navigating discordant and often nuanced requirements can be delicate and confusing. Institutions outside the US are sometimes faced with the predicament of following local policies and laws, while striving to adhere to the US regulations to which they agreed when they accepted US funding.

Developing international networks

Another key output from the fourth WCRI was a Partner Symposium run by ORI and representatives of Universitas 21, the Canadian Secretariat on the Responsible Conduct of Research, the European Network of Research Integrity Offices (ENRIO), and APRI founding members, designed to foster collaboration through international integrity networks. These networks also include the Association of Research Integrity Officers (ARIO), the Netherlands Research Integrity Network (NRIN), the UK Research Integrity Office (UKRIO) and the EQUATOR network. In learning about the newly formed APRI and NRIN as models for collaboration, attendees expressed an enthusiastic desire to form new networks for Latin America and Africa, where research integrity infrastructure is less developed than in other parts of the world.

ORI continues to support the momentum generated by individuals and groups at the fourth WCRI, who are working together to develop research integrity in their respective regions. By drawing upon the passion of their members to promote excellence at the local, national, regional and international level, these networks will no doubt contribute to the articulation of common standards and enhancement of research integrity around the world.

Further reading

Montreal Statement **http://bit.ly/23aEFS7**
Singapore Statement **www.singaporestatement.org**
World Conference on Research Integrity
www.researchintegrity.org

Zoë Hammatt is Director of the Division of Education and Integrity at the Office of Research Integrity, USA.
Loc Nguyen-Khoa is Health Scientist Administrator at the Office of Research Integrity, USA.

Open science: who should be involved?

What is open science and how does it differ to traditional scientific enterprise? Here, **Patrice Ajai-Ajagbe** tackles these questions and highlights how the ACU is supporting the global open science agenda.

Open science – sometimes known as Science 2.0 – is the movement to make scientific research, data and dissemination accessible to all levels of an enquiring society, amateur or professional. It rests on the twin pillars of open data and open access. For data to be 'open', it must be available to thorough scrutiny and appropriate reuse. Open access refers to online research outputs that are free from all restrictions on access, such as charges and restrictions on use, including certain copyright and licence restrictions.

Open science is enabled by several factors, such as new digital technologies, increasingly collaborative research activities, and the need to address global challenges.

Open science vs traditional science

The table below shows the differences between traditional science and Science 2.0:

Current model	Emergent model (Science 2.0)
Research done in private, then submitted to journals; peer review (guardians) of periodicals; publications	Data sharing at all stages of the research; scientists collaborate and findings are disseminated online
Scientific literature under payment barriers	Online scientific discoveries at no cost
Reputation established by the prestige of the journal or impact factors	Reputation established from quotes, page views or downloads
Data is private until it is published	Data is shared before publication
Papers have generic copyright protection	Different licenses are possible; copyright, Creative Commons, public domain, etc
Publishers earn by charging access	Publishers use new business models
Paper summary is available after publication	Sharing data, methods and findings via blogs, social networks, wikis, internet

Source: Open Science, Open Issues *(see further reading)*

Many governments have already developed open access principles for the use of government data and data from publicly funded research activities. For example, since 2007, OECD recommendations set out collective and precise standards or objectives (around guidelines for access to research data from public funding) which member countries are expected to implement. The Open Data Charter, signed at the 2013 G8 summit, highlights five principles that will be the foundation for access to, and the release and reuse of, data made available by G8 governments – the first of which is 'Open Data by Default'.

In addition many research funders – both public and private – have adopted a practical and ideological stance on open access and open data. The 'impact agenda', which obliges scientists to at least consider the economic and societal benefits of their work, and the advent of new digital technologies that enable the production of larger, more complex datasets have ensured that data is viewed not only as a by product of research but also as a resource that can and should be used by others. An investment in open science practices now (even if it proves costly) is expected to reduce the overall cost of research in the future.

In the short term, open science is expected to lead to increased transparency, integrity, openness, inclusiveness, and networked collaboration in research activities. In the long term, it should increase the impact and quality of science, making it more efficient, reliable and responsive to the grand challenges of our times, as well as fostering co-creation and open innovation.

Thus there are increasing requirements for data management plans to be included in research funding applications, for datasets to be submitted to support research findings, and also, for any papers summarising the findings of research to be open access wherever possible. Data is no longer seen as supplementary to the final research paper – it's increasingly viewed as an important output. There is now evidence showing that studies that make their data available receive more citations than similar studies that do not.

Best practice

However, while there is movement towards open science, for it to be truly open researchers must adhere to certain central practices, which will inevitably be influenced and shaped by three main considerations:

- **The social aspects**: what are others doing and how are they doing it? This includes factors such as the use of correct and appropriate metadata, and the use of relevant sites, repositories and publication avenues. For data to be universally accessible, it needs common formatting.

- **The technical aspects**: what technology and technical skills are required to participate in open science? This includes factors such as the ability to cite, extract, aggregate and disaggregate datasets, and the use of digital object identifiers.
- **The legal and ethical aspects**: what data and practices should be open – and also, what are the intellectual property and legal implications of doing so? This will be affected by country-specific regulations and practices.

Institutions that produce research must think about their data in an international context and enhance their understanding and provision in open science – most institutions, in response to the above considerations, will have already started investigating the following issues:

1. **What should individual researchers be aware of, and what should they be doing now?** For example, should they be using digital object identifiers or persistent identifiers; what available international repositories are there and should they be submitting research outputs already; what are the metadata standards and are researchers meeting them?
2. **What university structures are required to support activities in this area?** Examples include support for registries, data management plans, data science skills, and sufficient internet/bandwidth provision.
3. **How do university offices (research management, libraries, postgraduate school, etc.) support, monitor and regulate the open science agenda?** Science 2.0 has implications for how early career researchers should be trained. There is a need in the research community to debate and agree on what the requirements for doctoral training programmes should be, in order to fully realise the benefits of Science 2.0.

In the long term, open science should increase the impact and quality of science, making it more efficient, reliable and responsive to the grand challenges of our times.

Putting open science on the agenda

It's worth noting that participation in open science practices is not contingent on complex structures and/or funding – it's also influenced by an awareness of why individuals and institutions should be engaged and what they ought to be doing now. Although it is wise to consider the legal, ethical and technical aspects of open science, this needn't prevent individuals and institutions from starting to embrace some of the social aspects to begin with.

While governments and other organisations that fund research are currently leading the open science agenda, organisations such as the Research Data Alliance (RDA) and the UK's Digital Curation Centre support and provide resources for individuals and institutions wishing to develop their respective structures and practices to meet open science requirements.

The ACU is also interested in supporting its members to embed the required culture and skills to meet open science requirements and big data challenges. Since 2015, the ACU has begun highlighting open science as a pertinent issue through its projects and networks; for example, last year's Commonwealth Summer School focused on 'Big Data and the Digital Divide'. In 2016 the ACU is supporting a small cohort of early career researchers from developing countries to attend the CODATA-RDA summer school – a short course in the data science approaches and skills that are essential for 21st century research.

The ACU is also a partner in the RDA Europe projects which are rapidly building the social and technical bridges that will enable the open sharing of data on a global level. These projects will ensure that political, research, industrial and e-infrastructure stakeholders are aware of, engaged with and actively involved in global RDA activities.

Through activities such as these, the ACU seeks to support and engage its membership with the fast-moving global open science agenda.

Open science seeks to optimise the scientific enterprise, by exploiting the tools of the digital age. It is pertinent to everyone who funds, conducts, publishes, and has an interest in the outputs and outcomes of the scientific enterprise.

Although there will invariably be some independent organisations who will be able to determine the extent to which they adhere to open science practices, the momentum is already in the direction of 'open by default'.

We're already all involved.

Further reading:

International Council for Science (ICSU), *Open Data in a Big Data World: an international accord* (2015)
S. Albagli, M.L. Maciel, A.H. Abdo, *Open Science, Open Issues* (2015)
The G8 Open Data Charter
www.gov.uk/government/publications/opendata-charter
Research Data Alliance **rd-alliance.org**

Patrice Ajai-Ajagbe is Programme Officer at the ACU.

UCL Press: an open access publishing model

Lara Speicher shares why UCL Press was established, what goes into running it, and how setting up an open access model can have far-reaching benefits.

UCL Press was officially relaunched in June 2015. It is the UK's first fully open access university press, and it publishes scholarly monographs, short monographs, textbooks, edited collections, scholarly editions, and journals. It makes all its publications freely available to download in PDF form, as well as selling reasonably priced print copies of the books.

University College London (UCL) believes that scholarly research should be made available freely to all, for the wider benefit of society. UCL authors are funded by UCL to publish with the press, providing a genuine open access publishing alternative for scholars to share their work.

Why open access?

UCL Press had existed at the university in the early 1990s, but it was later licensed to a commercial publisher. The imprint lapsed in around 2007 and UCL's senior management team was keen to reestablish it in-house as they could see great potential for publishing activities. UCL also wanted to offer its academics an open access publishing alternative, alongside its other open access support services, which include a central funding department and UCL Discovery, the institutional repository. The open access ethos is at the heart of UCL and an open access university press was an obvious complement to, and extension of, these existing activities. Open access provides free access to published research to anyone in the world with an internet connection

Publishing plans

This new-look UCL Press published eight books in its first year, covering a range of subjects including archaeology, history, and poetry. The press accepts proposals for books on any subject taught at UCL, but the majority of proposals received so far have been in the arts, humanities, and social sciences.

UCL Press plans to publish around 20 books in 2016 and 30 in 2017. It has been encouraging to see a large number of proposals for books and series from UCL researchers – over 150 in the last two years – demonstrating a high level of engagement with open access and significant support for the institution's new press.

UCL Press also publishes three journals: the *London Journal of Canadian Studies*, *Architecture_MPS*, and the *Journal of the Jewish Historical Society*. All of these were existing titles with their own publishing arrangements and some of them were already open access. The press has received several more journal proposals, for both new and existing journals, and there are plans to build up the journal portfolio by at least four more during 2016.

UCL Press also hosts an open access student journal publishing platform, Open Journal Systems, on which five student journals are currently published. UCL Press manages the software and the training, and the journals manage themselves, with support from faculty. This gives students excellent experience of the writing, editing, peer review, and publishing process.

Measures of success

Usage statistics and download figures are the key measures of success for UCL Press. The first eight titles have achieved combined download figures of over 18,000 (as of 1 March 2016) in over 150 countries around the world. The highest downloads for individual titles have been achieved by *The Petrie Museum of Egyptian Archaeology: Characters and Collections*, a book celebrating the 150th anniversary of the opening of the Petrie Museum at UCL, which has been downloaded over 4,000 times since June 2015, and *Temptation in the Archives* by Professor Lisa Jardine, which has been downloaded over 3,500 times.

Other measures of success are publicity, in the form of media coverage, social media, and book reviews, and engagement by authors with UCL Press, in terms of the quantity and quality of proposals received. Given that traditionally published scholarly monographs are typically reported as selling in the low hundreds in their lifetime, this is a very encouraging start, and download figures of this kind of number are being echoed by other open access presses.

Peer review and submissions

All UCL Press' books are rigorously peer reviewed. All authors, whether from UCL or not, are required to submit a full book proposal along with sample chapters, which are considered by an editorial board, before the author is offered a contract. The final manuscript is also reviewed.

Funding and book processing charges

The press plans to increase the number of non-UCL authors over the coming years and has already signed contracts with several authors. At present, the press charges a book processing charge (BPC), starting at GBP 5,000 for average length black-and-white monographs. Other forms of funding, such as a library subscription model, are being explored in order to fund a greater number of non-UCL authors, since many – particularly in the arts and humanities – find it difficult to raise the BPC. There is also a waiver scheme in place to fund two or three exceptional monograph proposals a year from non-UCL academics.

Dissemination and marketing

UCL Press' open access monographs are stored in UCL's

institutional repository, UCL Discovery, in PDF form. These are directly accessed from UCL Press' website. UCL Discovery provides daily statistics of downloads around the world.

The press' open access monographs are also hosted on OAPEN – the European platform for hosting and disseminating open access monographs – as well as unglue.it and Worldreader – a charitable organisation that provides free e-books and e-readers to developing countries. A number of other platforms, including Open Edition, are currently being considered.

In addition, UCL Press has developed a browser-based platform. For this platform, two pilot projects have been published using the content from *Treasures from UCL*, a book describing and illustrating UCL Library Services Special Collections, and *The Petrie Museum of Egyptian Archaeology*. The digital editions feature dual navigation (chronological and thematic), slideshows of images, deep zoom features, 3D, audio, and video, to give a very rich and distinctive reading experience.

As of March 2016, the platform includes scholarly monographs. This includes entirely different features, more suited to scholarly research and dissemination, including the ability to highlight, make notes, export, cite, share, and save personalised copies of the books.

UCL's journals are hosted on IngentaConnect, a publishing platform that hosts the journals of over 300 scholarly publishers. It makes the journal articles available as open access in PDF form and provides a landing page for each journal. IngentaConnect is widely used and is subscribed to by numerous institutional libraries.

In order to distribute its print books, UCL Press uses print-on-demand technology, combined with distribution services (from NBN International, a specialist book distributor used by numerous publishers) and sales representation to retailers via Compass Sales Representation. Compass representatives visit wholesalers, library suppliers, online retailers, major UK chains such as Waterstones, campus booksellers and independents, to present publishers' forthcoming titles and take orders.

Staffing

The UCL Press team currently consists of four members of staff, all with a publishing background. As well as my role – the Publishing Manager – there is a Commissioning Editor, Managing Editor, and Marketing and Distribution Manager. We have plans to recruit a Journals Manager during 2016.

UCL Press' Marketing and Distribution Manager provides a full range of marketing activities for all its books, and liaises with other departments such as media, communications, and alumni relations. The Marketing Manager uses multiple channels to promote UCL Press' titles, including social media, print catalogues, the UCL Press website, book launches and newsletters. She also works closely with authors to identify relevant special interest groups, journals, conferences, courses, and societies to which the books can be promoted, and to encourage the authors to promote their own books as widely as possible.

Conclusion

While open access monograph publishing certainly presents a number of challenges, not least the financial model, the case of UCL Press demonstrates that it is possible for an institution to establish its own publishing alternative, and that the benefits to the institution can be substantial in terms of reputation and reach.

While there is certainly a cost involved, the ability of an institution to showcase its own research is a clear demonstration of its wider impact on society, and of its ethos in making that research widely available to the world. By repurposing a part of its budget for open access publishing, an institution can achieve wider impact with its publications than if they were behind a paywall – open access enables books to reach a diverse, global audience, potentially far greater than that reached via traditional publishing means.

Lara Speicher is Publishing Manager at UCL Press, University College London, UK.

University presses

Despite some open access journals, such as *PLOS*, setting a good example, other larger publishers are coming under fire for their handling of the move towards open access publishing, with stories of them either failing to fulfill funding requirements or simply overcharging for open access services. University presses are therefore becoming a great way to embrace the open access agenda.

Ubiquity Press, featured in an earlier edition of *Realising Research*, is working with a number of university presses (including the University of Westminster, Sri Lanka Journals Online and Stockholm University Press among others) to overcome some of the structural difficulties with hosting online open access journals.

There are also examples of very small-scale ventures, such as *TOR:The Open Review of Social Sciences* a student-led journal which was established recently at the South West Doctoral Training Centre in the UK, giving students another avenue to disseminate their work, and also enabling them to better understand the publishing process from the publishers' perspective.

Academics can also self-publish their academic works through online retailers like Amazon, cutting the costs of their works and reaching a much wider audience, albeit with a potential loss of earnings given the reduced prices of e-books.

With the increase of open science and the growing demand for uploading datasets, there are now examples of journals hosting an array of research materials, such as the *Research Ideas and Outcomes* (RIO) portal, which will publish rejected research proposals, datasets and conference presentations, as well as final research papers.

Recent publications

Nick Mulhern, ACU Librarian, looks at recent titles.

Boosting Malaysia's National Intellectual Property System for Innovation
[OECD; 2015]
An analysis of innovation contexts and statistics for Malaysia, including intellectual property opportunities and uses.

Building Blocks: Laying the Foundation for a Research Data Management Program
[Erway, R. et al; OCLC; 2016]
A useful guide with brief practical recommendations and links to relevant resources, on establishing a research data management programme. It covers training, planning, policy and promotion, and is aimed at 'those who are just beginning to offer data services to researchers at their universities'.

Data Driven Innovation: Big Data for Growth and Well-Being
[OECD; 2015]
Detailed study of data driven innovation (DDI) and its potential benefits, including the scientific research it could promote, related skills and employment contexts, and the role of cities as hubs for DDI. 'Data analytics leads to new ways of decision-making.'

Ensuring a Successful UK Research Endeavour: a Review of the UK Research Councils (Nurse review)
[Nurse, P.; BIS; 2015]
An independent review and series of recommendations on UK research funding, in particular on the Research Councils and their role, with reference to other research agencies, prompted by the UK Government's Science and Innovation Strategy. 'Generally research funding decisions should be driven by peer level scientists carrying out relevant research operating at an international level – because they are the ones best placed to come to the best decisions.' See article on pages 8-9 for more.

If You Build It Will They Fund? Making Research Data Management Sustainable
[Erway, R.; Rinehart, A., et al; Online Computer Library Centre (OCLC); 2016]
A brief review of funding strategies on research data management support, principally in the US but with some notes of approaches in other countries (e.g. Canada, New Zealand, and the UK). Options include incorporating the costs in outlining research budgets, charging those who deposit or who use the data, to endowments and outsourcing.

Innovations in Knowledge and Learning for Competitive Higher Education in Asia and the Pacific

Integrated Information and Communication Technology Strategies for Competitive Higher Education in Asia and the Pacific
[Sarvi, J.; Pillay, H.; Asian Development Bank (ADB); 2015]
These two interrelated reports focus on innovation and ICT strategies to support the region's higher education, and what practical changes could be made to gain greater 'global recognition'.

Library and Information Services in Africa in the Twenty-First Century
[Tise, E. (Issue Editor)]
Includes articles on career development, doctoral advising, and open scholarship.

LIS Education and Research in a Dynamic Information Landscape: Proceedings of the Library and Information Studies Centre: 75 Years Commemorative Conference
[Bitso, C.; Raju, R.; UCT Libraries; 2015]
Conference papers on libraries, library education, and information skills, reflecting experience (and changed ways of working) in South Africa, Australia, the US and the UK. 'Research imperatives', one of the conference's sub-themes, is implied in discussions of open science, research data management, and scholarly communication.

OECD Reviews of Innovation Policy: Malaysia
[OECD; 2016]
One of a series of national studies of innovation systems and related policy recommendations, in the context of changing markets and new competition.

OECD Science Technology and Industry Scoreboard 2015: Innovation for Growth and Society
[OECD; 2015]
Comparative analysis of science, technology and industry indicators and trends internationally, including the education and skills contexts which support such innovation (e.g. doctorate holders, research excellence (citations), international mobility and collaboration). One measure of scientific mobility is the level of recorded changes in institutional affiliation, a measure dominated by the US.

Research Data Management Framework Report (CONZUL Working Group)
[Wilkinson, M., et al; CONZUL; 2016]
A review of the context for research data management (RDM) in New Zealand, incorporating recommendations on policy and principles, as well as the new work which it involves. RDM is more than simply technology, it depends on information management, so 'libraries will be essential in precipitating the cultural change necessary for RDM practice to be embedded in good research practice'. The multiple roles which RDM generates will vary according to needs and contexts; there are likely to be various overlapping roles in practice, 'extending and mixing the skills of professional academic services like librarianship, IT, and Research Services'.

Research Data Management: Roles for Libraries

[Rambo, N.; Ithaka; 2015]

A case study-based account of research data management and the factors affecting its development at New York University Health Sciences Library (NYUHSL). Central also was 'to understand the researcher's needs, pressures, and environment and assess what you do with them and for them in that light'.

Review of Australia Research Training System: Final Report (for the Australian Council of Learned Academies)

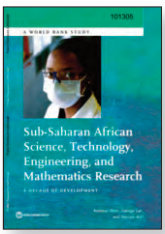
[McGagh, J. et al; ACOLA; 2016]

A review of Australia's higher degree by research (HDR) training system with recommendations for better preparing and financing students, supporting industry-relevant research projects, and enabling industry placements in research training (it quotes Canada's Mitacs Accelerate programme as being a successful precedent). 'Australia must aspire to improve its industry-university collaboration performance to equal that of the top 25% of our OECD international competitors… research training has a crucial role to play in achieving this aspiration'.

Science, Research, and Innovation Performance of the EU (A Contribution to the Open Innovation, Open Science, Open to the World, Agenda)

[EC. Directorate-General for Research and Innovation; 2016]

A detailed statistical analysis of research and innovation in Europe to help inform policy. It includes coverage of associated issues (e.g. funding and the role of research for economic development), and as such it 'represents the most comprehensive analysis of research and innovation in the EU'. The long term growth gap between the EU and the US has been exacerbated by the recession, with the EU being shown as under-investing in the drivers of innovation: education and skills, research and development and ICT. Nevertheless, the EU remains the largest producer of scientific publications in the world.



Sub-Saharan African Science, Technology, Engineering and Mathematics Research: a Decade of Development

[Blom, A. et al.; World Bank; 2016]

A study of STEM research performance (including output, collaboration, and mobility) between 2003 and 2012. While focusing on sub-Saharan Africa, it also makes comparisons with Malaysia and Vietnam. Research output, which is assessed through the Scopus citation database, has increased, but given the significant contribution of international collaboration, visiting faculty, and returning diaspora there is, it suggests, a 'lack of internal research capacity'.

The Implications of International Research Collaboration on UK Universities

[Adams, J.; Gurney, K.; Digital Science; UUK. International Unit; 2016]

A UK study which shows the importance of collaboration and links for research strength. The US remains the leading international research partner, though Germany and France have become more significant.

The Quest for Deeper Meaning of Research Support

[Raju, R., et al; UCT Libraries; 2015]

Papers from an IFLA 2015 Conference on the redefined role of academic libraries and librarians in supporting research; contexts include South Africa, Uganda, the US, UK, Australia and Canada. Research services, structures and skills are variously reviewed as librarians' work moves 'from reactive disseminators of information to proactive partners in the research and teaching and learning process'. Likewise, libraries can then also be recognised 'as major contributors to their institutions in achieving their strategic goals'.

Translating Research for Economic and Social Benefit: Country Comparisons

[Bell, J.; et al; ACOLA; 2015]

A comparative analysis of research commercialisation and collaboration – what works or does not – and how research impact in terms of 'translation and engagement' is measured. The 14 countries covered as possible precedents for Australia include the US, UK, China, Singapore, and Brazil. A stable national innovation strategy is fundamental, while support and incentives are recommended for business, researchers, and HE institutions.

Trends Shaping Education

[OECD; 2016]

Globalisation, the nation state, family, and technology are the contexts used to analyse how education is being influenced. The significance of cities in contributing to innovation is shown (it estimates a 40% increase over the next 15 years in the number of cities hosting head offices), and the potential support which cities can offer to education, specifically graduate skills for 'knowledge-intensive economies'.

UNESCO e-Atlas of Research and Experimental Development

[UNESCO. Institute for Statistics (UIS); 2015]

Comparative indicators and measures (automatically updated with current data) on funding and staffing of research and development internationally. Useful for trends analysis.

World Development Report: Digital Dividends

[World Bank; 2016]

Considers the potential benefits of digital technologies, the policies and priorities which would enable them to be realised, and also the possible inequalities which need to be guarded against. Digital development is reviewed through several sectors, including education.

The publications round-up, including links where available, is also available at **www.acu.ac.uk/rki**

ACU Member Communities

The ACU is launching a series of new special interest groups – the ACU Member Communities – which will connect colleagues and other stakeholders working in three key areas of university activity. The new Communities will bring university staff from across the Commonwealth together to share their experiences, explore ideas, and discover potential avenues for collaboration.

The Member Communities are free to join for all staff and students of ACU member institutions, and individuals may join as many as they feel are relevant to their work.

ACU Research, Knowledge and Information Community

For all university staff who support and encourage, but don't directly engage in, the research process, including those working in libraries and information, as well as research management and administration. To find out more, visit **www.acu.ac.uk/rki** or email **rki@acu.ac.uk**

ACU Engage Community

For all university staff and stakeholders working or involved in university community engagement and outreach, including university public engagement staff, industrial liaison officers, research managers and communication officers, and those specialising in distance or open learning. To find out more, visit **www.acu.ac.uk/engage** or email **engage@acu.ac.uk**

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For university staff involved in international education, including such as areas as student and staff mobility, international campuses, and the internationalisation of curricula and research. To find out more, visit **www.acu.ac.uk/internationalisation** or email **internationalisation@acu.ac.uk**

Alternatively, write to us at the address below with your full contact details, stating which community you'd like to join:

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