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Seeking Impact and Visibility

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Published by African Books Collective

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Seeking Impact and Visibility: Scholarly Communication in Southern Africa.

African Books Collective, 2014.

Project MUSE.muse.jhu.edu/book/32990.



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Chapter 1

Programme overview

The Scholarly Communication in Africa Programme (SCAP) was established to help raise the visibility of African scholarship by mapping current research and communication practices in four Southern African universities and by recommending and piloting technical and administrative innovations at these sites based on open access dissemination principles.

SCAP was founded with the understanding that African scholarly research is relatively invisible for three primary reasons:

1. While research production on the continent is growing in absolute terms (Metcalf, Esseh & Willinsky 2009; Mouton 2010; Tijssen 2007), it is falling in comparative terms (especially as other Southern countries, such as China,¹ ramp up research production), reducing its relative visibility.
2. Traditional metrics of visibility (especially the ISI/WoS Impact Factor),² which measure only formal scholar-to-scholar outputs (i.e. journal articles and books), fail to make legible a significant amount of African scholarly production, thus underestimating the amount of research activity on the continent.
3. Many African universities do not take a strategic approach to scholarly communication, nor utilise appropriate ICTs and Web 2.0 technologies to broaden the reach of their scholars' work or curate it for future generations, thus inadvertently minimising the impact and visibility of African research.

The first challenge listed here speaks to a global phenomenon that is defined by macro-level disparities in resources, infrastructure, capacities and population sizes. These

1 Julia Chan (2011) Asia: the growing hub of scientific research, *The Asian Scientist*. Available at: www.asianscientist.com/features/asia-future-hub-scientific-research/

2 The Impact Factor – a metric devised by the Institute for Scientific Information (ISI) in the 1960s and now maintained by the Thomson Reuters Web of Science (WoS) – purports to measure the “impact” of a journal within a given academic field and, by proxy, suggest an evaluation of the relative impact of the articles published within it. The Impact Factor is a number representing the average number of citations that a journal's articles collectively receive during a two-year period. Thus if the Impact Factor for a journal in 2011 is 4, then the articles published in that journal in 2009 and 2010 collectively averaged four citations each in 2011.

disparities help make sense of Africa's various higher education predicaments, but they cannot be changed by a research project such as SCAP. Thus, while the SCAP team was always cognizant of this overriding context that structured the scholarly communication possibilities in Africa, we did not focus on tackling them, but rather on the latter two challenges, which were located in our sphere of influence.

The second challenge – concerning scholarly visibility metrics – is also a global phenomenon, but largely confined to the academic community and a matter of intense debate. Traditional scholarly metrics are under threat by funders, research assessment officers, open access publishers and alternative metrics advocates who seek to utilise the capacity of Web 2.0 platforms to gain a more accurate and comprehensive sense of the impact that a scholarly output has (beyond the blunt journal citation aggregations that WoS provides). Because many scholarly outputs from Africa are not published in WoS-listed journals – but rather in a plethora of other outlets – they do not get measured in the prestige-based indices that render so much of African research (including reports, briefs, conference papers, seminar presentations, consultancy work, etc.) invisible.³ The conclusion that many analysts draw from this is that no research of value is taking place on the continent – an inappropriate conclusion given the limited perspective it provides of African research production. Therefore, in our effort to raise the visibility of African research, we advocated for scholars worldwide to use a more comprehensive, precise and “complementary” set of metrics than those currently used to assess scholarly visibility.

The third challenge – concerning the lack of strategic engagement with scholarly communication by African universities – was the main issue that SCAP hoped to change. This is a challenge located largely within the boundaries of the continent, the product of choices and priorities by African governmental ministers, university managers and academics. As a research and implementation initiative located in Africa, committed to locally appropriate solutions, SCAP decided to intervene at this level where we could have the greatest effect. It was our belief that if we could research and advocate a more strategic approach to scholarly communication, we could not only raise the visibility of Southern African research, but also offer a model to other African universities seeking to do the same. This would be based on strategic policy innovations, open access principles and Web 2.0 ICT platforms.

The universities that SCAP engaged were the:

- University of Botswana (UB)
- University of Cape Town (UCT)
- University of Mauritius (UoM)
- University of Namibia (UNAM)

3 Mouton (2010: 8) states that “international publication in the ISI-journals (19,154 articles for the total period 1990–2007) only constitutes about one-third of total social sciences scholarship in the [Southern African] region.” This corresponds with the ratios given by the University of Namibia in a recent research report that says “the year under review has seen a total output of 394 publications from the University, 23% of which are peer-reviewed journal articles and 11% are books and book chapters (UNAM 2009: 6), meaning that 66% of outputs were “other” types (2009: 9), guaranteed to be invisible according to the ISI/WoS index. This high production ratio of non-indexed materials in the region is discussed in more detail in Chapter 5.

Scholarly in/visibility

Scholarly communication comprises a broad range of activities “including the discovery, collection, organisation, evaluation, interpretation, and preservation of primary and other sources of information, and the publication and dissemination of scholarly research” (Cullyer & Walters 2008: 1). In this report, it will largely focus on the communication activities necessary for research collaboration and output dissemination. However, the effectiveness of this communication – especially output dissemination – is shaped by the fact that audience attention is a scarce resource. There are more scholarly outputs produced than can be equally engaged by the academic community, meaning that scholarly outputs are in a state of competition with each other, with some achieving greater “visibility” than others.

According to Abrahams, Burke and Mouton (2010: 22), “visibility is comprised of a number of features including visibility of authors and content through abstracting and indexing databases, through availability in library collections, through web-based publishing, and visibility of research performance as measured through various bibliometric measures such as citation counts and impact factors.” It is not simply publication in a journal listed by the Thomson Reuters WoS, which has for a long time been the standard by which visibility is assessed. Rather:

Visibility of scholarly communication means that specific knowledge and authored works can be discovered because they are traceable. More importantly, in this regional context, visibility means that research on subjects and themes of local interest should be made public in ways that will enable the relevant actors (researchers, students and development practitioners) to easily identify local research that can be a valuable contribution to society, whether for future knowledge production or for development practice. (Abrahams, Burke & Mouton 2010: 22–23)

This means that visibility amounts to more than just “accessibility” (such as when an object is available in hard copy at a university library). It means digital accessibility. Moreover, it means that a scholarly object is profiled (usually through metadata) in such a way that makes it easily findable by search engines or databases through a relevant search string. Without such metadata, or without the object shared in a format that allows crawlers to search its text (such as PDFs and HTML pages rather than TIFFs and JPGs), then the digital object remains virtually invisible. In those cases, it is technically accessible, but essentially invisible because it is not locatable using standard searching procedures. Thus, visibility requires a communications strategy, one of the ingredients missing in many African universities’ and scholars’ approach to research dissemination.

This lack of strategy is partially responsible for the disorienting image in Figure 1.1 which visually represents the relative contributions made by each country to global scientific research output as published in ISI-listed journals (in 2001). The fish-eye effect of this perspective squeezes the massive African continent down to the size of a narrow peninsula, thus begging explanation. However, this startling representation is indicative not of the absence of research activity per se, but of the continent’s lack of representation in

“international” journals and its inefficiency at disseminating research findings in a more strategic, representational manner. As Tijssen (2007: 307) points out:

It is important to keep in mind that these diminishing shares of African science do not reflect a decrease in an absolute sense, but rather an increase less than the worldwide growth rate. During the last 15 years, African output has in fact risen by 38%, up to some 46,000 articles in 2001–2004.

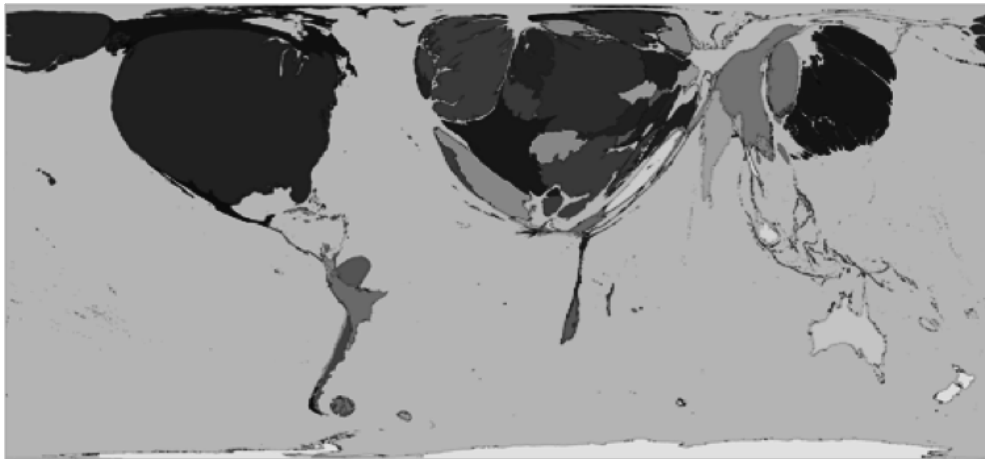


Figure 1.1 Representation of global scientific output, by proportion of ISI article production⁴

Chan, Kirsop and Arunachalam (2011: 1) further caution against an over-simplified reading of this cartographic representation, in that “this inequity has led to the misguided notion that little, if any, research of substance is generated in the global South, and that the needs of researchers in poor countries are therefore met solely by information donation from the North.” However, given that this map is based on data from 2001, it likely shows Africa in a “thicker” visual profile than if the numbers were current. It does not account for the explosion of research production from places like China, which would render Africa’s profile even “skinnier”, despite the continent’s absolute increase in highly rated scientific publications.⁵ Thus the challenges regarding Africa’s visibility remain a persistent concern even as scholarly communication trends evolve.

4 The map illustrates the relative proportions of ISI-rated scientific papers published per million people in 2001. This covers articles in physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering, technology, and earth and space sciences. The number of scientific papers published by researchers in the USA was more than three times that published by the second-most-publishing nation, Japan. Source: www.worldmapper.org/display.php?selected=205 [accessed 2 September 2010]. Image copyright SASI Group (University of Sheffield) and Mark Newman (University of Michigan). Permission has been granted to reproduce this figure under the terms of the Creative Commons Attribution License.

5 This particular Worldmapper image has not been updated since 2001 according to Professor Mark Newman (private communication), one of the creators of the map. Other evidence that we have drawn from Tijssen (2007) and Mouton (2010) suggests that an updated map would actually make Africa appear even less visible. Indeed, due to its comparatively low level of outputs in ISI-rated journals, Africa is often lumped into a “rest of the world” category in various research impact reports. (See for instance the National Science Foundation’s *Science and Engineering Indicators 2012 Digest* section on “Research Outputs: Publications and Patents” at: www.nsf.gov/statistics/digest12/outputs.cfm#1)

Furthermore, as Mouton (2010: 6–7) explains:

The ISI-journals have a distinct Anglophone bias which leads to poor coverage of Francophone and (to a lesser extent) Lusophone countries in SSA [sub-Saharan Africa]. In addition the ISI's coverage of small journals in developing countries is not good. The latter is a result of the policy of the ISI to include only the highest impact journals in the world which means that many journals in the developing countries (which have small circulation lists and hence restricted readerships) are thereby automatically excluded. All of this means that a significant proportion of African social science is simply not visible in international indexes.

Hence, because so much African scholarship remains outside of the ISI/WoS index, and because continental institutions and scholars have not applied a cohesive or strategic approach to disseminating outputs, “there is a preponderance of unpublished research, including conference and advocacy papers, technical and consultancy reports, theses and dissertations (‘grey’ literature) which is not easily accessible because it is generally not held in university libraries or available online” (Abrahams, Burke & Mouton 2010: 29).

Of course, institutions around the world face new imperatives to increase investment in research production and knowledge management. For research institutions, this means adopting a strategic focus on content curation and profiling so as to boost institutional reputation, remain competitive in global institutional rankings, provide support services that academics rely on to conduct research and collaborate internationally, and maintain compliance with grant funder mandates.

For African higher education institutions (HEIs) there are additional pressures for developing scholarly communication practice and ramping up the institutional content curation effort. For instance, faced with limited research grant funding and constrained by international publishing opportunities, African HEIs must choose whether they want to support local (particularly niche) research by making outputs from that effort freely and openly available. Doing so would encourage the production of local scholarship and ensure that African scholars have access to locally relevant content by authors embedded in the context. But failing to do so would wither nascent research buds on the continent, forcing greater reliance on externally produced research. As Abrahams, Burke and Mouton (2010: 24) point out:

Students, researchers and practitioners are likely to cite and utilise authored works from abroad over work from the region because of high versus low visibility in particular areas of study, such as in genetics, education and environmental engineering, where research output is particularly low. Thus, low visibility and low accessibility are major factors in slowing down research production on the sub-continent, thus limiting the application of knowledge for development purposes.

The need for research to address development is not unique to the African context, but the links between dissemination, innovation and development increase the imperative

(and prospective return) for African universities to profile and curate their own research. In line with this approach, the knowledge production enterprise funded by taxpayers needs to move beyond a “closed” academic enterprise (in which knowledge exchange typically happens on a scholar-to-scholar basis by means of the traditional journal article or book chapter) to an “open” exchange process that includes scholar-to-community and scholar-to-government activities (utilising a broad range of content formats and genres).

Open access for development

A key way to enhance the visibility, reach and effectiveness of African research is by communicating it according to open access (OA) principles. By “open access”, we mean that scholarly research outputs are made freely available:

on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles [and other output types], crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. (BOAI 2002)⁶

Making all African research outputs clearly profiled (through metadata), curated (on stable digital platforms) and freely available to the public (at no cost to the user) would give African research a higher likelihood of not only shaping academic discourse because it would be more visible to scholars, but of getting into the hands of government, NGO, industry and civil society personnel who can leverage that research for economic growth and development.⁷

According to Chan, Kirsop and Arunachalam (2011: 1), the growing volume of OA resources “provides a far greater degree of freedom for researchers to exchange and collaborate, for knowledge to be translated into useable forms by frontline health workers, and for emerging technologies such as text mining and semantic tagging for faster knowledge discovery to be used.” Moreover, research shows that OA publication increases the likelihood that a scholarly output is both read and downloaded at a higher rate than non-open access publications (Gargouri *et al.* 2010).

6 A number of groups and organisations – in Budapest (2002), Bethesda (2003) and Berlin (2003) – have defined open access from slightly different perspectives. For a useful discussion of open access, see: Suber 2012; Peter Suber’s “Open Access Overview” available at: <http://legacy.earlham.edu/~peters/fos/overview.htm>; and the OASIS (Open Access Scholarly Information Sourcebook) article, “Open Access: What is it and why should we have it?” available at: www.openoasis.org/index.php?option=com_content&view=article&id=130&Itemid=390

7 For example, “the publicly funded Human Genome Project and its freely reusable data generated a massive 141-fold return on investment in economic returns alone ... [and] 30% more new clinical products than the privately funded, closed genome-sequencing project of the US biotech firm Celera Genomics” (Neylon 2012).

However, at the moment, “many research publications by African researchers, especially those focused on domestic or regional African issues and problems, are not accessible through the modern ICT facilities” (Tijssen 2007: 324). Furthermore, “multiple stakeholders including university presses, libraries, and central IT departments are challenged by the increasing volume and the rapidity of production of these new forms of publication in an environment of economic uncertainties” (Harley 2008: 2).

This means that African universities – many of which are only now beginning to develop research agendas of their own – must also establish new capacity, processes, governance structures, business models and policy frameworks for open access communication. This is not a trivial matter, nor is it easily achieved. Yet despite the burden that a move to a strategic engagement with OA would mean for most African universities, SCAP remains convinced that it must proceed.

Consider the broader open access context in which African scholars must chart their path: in the past few years, major funding bodies in the EU, the UK and the USA have legislated open access mandates, requiring that all research funded by them must be made OA (see Chapter 4 for more details on funder mandates). This will raise the visibility of the North’s own research outcomes while (comparatively) lowering the visibility of Africa’s research, which is not produced under a similar mandate. The flood of research that will emerge from the North will further marginalise the relatively small volume of outputs coming from Africa. This research will not only be openly shared, but will be curated and described with metadata, making content interoperable, searchable and indexable at unprecedented levels.

These developments – which will likely be matched in other parts of the world soon – require urgent action from African institutions. SCAP believes that this marks an opportunity for African universities to move beyond playing “catch-up” with the North to leveraging new technologies and approaches to address local ambitions while participating in the international scholarly landscape.

Technology and capacity

Africa’s response to this changing communications environment will require not only strategic dissemination policies and OA publishing practices, but appropriate use of new technologies that are reshaping the scholarly communication environment. The advances in ICTs over the past years – such as broadband internet, Web 2.0 platforms and inexpensive digital storage devices – have transformed scholarly communication. Yet, to date, many ICT innovations have failed to act as an equalising force in academic collaboration and contribution on the continent. In some ways, they have reinforced familiar global inequalities that resemble a “digital divide” (Fuchs & Horak 2008) between the visible and the invisible.

However, this need not be the case in the future. Most of the technologies required for engaging in OA communication and visibility-raising dissemination are either already available at African institutions, freely available on the internet or relatively inexpensive

to purchase. For instance, many African universities possess high-resolution scanners, institutional repositories, websites, computers, servers and access to the internet.

They also have access to the same free Web 2.0 technologies⁸ – such as Academia.edu, ResearchGate, Mendeley and FigShare – that have allowed individual scholars elsewhere to enhance their scholarly profiles and collaborative opportunities. The problem is that these have not been incorporated into a strategic plan concerning scholarly communication. They have been utilised in an ad hoc fashion, often the pet project of a lone innovator, but not part of a systematic approach to an institutional issue. Thus the solution is not simply to have “access” to current technologies, but to have a plan for how to use them.

Moreover, the incorporation of new ICTs into an existing scholarly ecosystem requires the skills and capacity to support and maintain them. This is often lacking at African universities where training efforts focus on other aspects of a job (such as book cataloguing for librarians rather than DSpace metadata capturing of alternative outputs). It is also due to a lack of funding to hire and train new people.

Thus, each of these elements is important for raising the visibility of African scholarship: an open access dissemination strategy, access to and use of Web 2.0 technologies and the human capacity and skills to use them. Each of these exists within reach of most African universities, but only if they are made a priority. The SCAP project was initiated to help achieve that.

Project description

Funded by the Canadian International Development Research Centre (IDRC), the three-year SCAP programme, which commenced in 2010, built on the findings of a number of previous studies and interventions⁹ to address the particular challenges faced by African universities as they attempt to align their scholarly communication practices with rapidly evolving global standards in a manner that reflects their core institutional values.

SCAP was a research and implementation initiative that sought to demonstrate, through the use of case studies and the development of a research evidence base, the financial, institutional and technical feasibility of universities in Southern Africa assuming greater responsibility for publishing their research in an open manner. Its central aim was to increase the visibility of African research and scholarly communication.

The primary question driving SCAP’s research was:

8 In the context of this project, Web 2.0 (or Web 2) refers to advanced internet technology and applications such as blogs, wikis, social networking sites, bookmarking services and really simple syndication (RSS) feeds. These technologies are commonly associated with web applications that facilitate interactive information sharing, interoperability, user-centred design and collaboration.

9 At the local level, these included UCT Centre for Educational Technology projects funded by the Shuttleworth Foundation in the period 2006 to 2009, namely the OpeningScholarship project and the UCT Open Educational Resources initiative, as well as other IDRC-funded initiatives such as the PALM project. At the regional level, the programme was strongly informed by prior research and networking activity of the Southern African Regional Universities Association (SARUA) and the activities of the IDRC Open African Innovation Research and Training (OpenAIR) intellectual property research programme.

What is the current state of scholarly communication in (Southern) African universities?

To answer this, SCAP visited each partner university four times over the course of two years in order to conduct interviews with scholars, librarians and managers, and to gather data through seminars, “change laboratory” workshops and surveys (a process discussed in detail in Chapter 2).

A secondary question driving our research was:

How can the use of information and communications technologies (ICTs), technology platforms and open access publishing models contribute to the improvement of strategic scholarly communication, and what institutional structures are needed to support such an approach?

To answer this, SCAP engaged in a series of institution-based implementation initiatives at each pilot site, stimulating the research environment and observing the results (discussed in detail in Chapter 6).

The specific objectives of the project were seven-fold:

1. Map the current status of research dissemination in four selected universities from four Southern African countries.
2. Understand the policy, ICT infrastructure and administrative support systems needed to integrate scholarly publishing and dissemination at these universities.
3. Work with partners from selected universities to support the use of open-source platforms that could interface with outputs such as journals, books and conference proceedings.
4. Build capacity in managing and sustaining an integrated scholarly communication system.
5. Explore the costs and benefits resulting from open access communication.
6. Develop complementary metrics that could align quality concerns, recruitment, recognition and rewards systems in order to promote greater access to knowledge.
7. Engage with institutional and governmental policymakers to raise the visibility of African research.

SCAP was originated in response to the need to grow the profile and global competitiveness of African research output. The project’s primary concern was with dissemination out of universities rather than issues around building research capacity. That said, it acknowledged the intrinsic link between research processes and communication, and the importance of examining current scholarly communication policy, practice and infrastructure against the institutions’ wider cultural historical contexts.

The complex nexus of issues and the interrelationships between low research productivity, declining annual national expenditure on research and development, and other national and regional factors affecting scholarly productivity has been documented in other

studies, such as those by Abrahams *et al.* (2008), ASSAF (2006), Cloete, Bailey and Maassen (2011), Habib and Morrow (2007), Harle (2010), Kotecha, Walwyn and Pinto (2011), Kotecha, Wilson-Strydom and Fongwa (2012), Mouton (2010) and Mouton *et al.* (2008). The SCAP research and implementation process built on this complex-systems approach seeking not only to understand institutional scholarly communication activity systems across micro (department/faculty/unit), meso (institutional) and macro (national/regional) levels, but also to grasp how these systems have been shaped by historical factors over time.

SCAP operated on the assumption that although African higher education environments faced a myriad of challenges, there was an opportunity to increase the production and visibility of scholarly outputs in Africa through the use of Web 2.0 technologies, digital publishing and curation platforms, and confederated computing and content hosting structures.

But before these opportunities could be harnessed, each institution's scholarly communication ecosystem had to be described, analysed and understood – a process necessitating significant research (the results of which are discussed in Chapter 5). It also required an ambitious advocacy component that required us to engage with university scholars, librarians and managers, as well as other higher education stakeholders in government and civil society.

This study shares the results of SCAP's research and advocacy efforts, describing not only the scholarly communication ecosystems that currently exists at these partner institutions, but the opportunities available for raising the visibility of their scholarship. It concludes with a discussion of our research findings and a series of recommendations – aimed at the national governments, university managers, university academics and research funding agencies – that we believe would enhance the communicative and developmental potential of these universities' research and offer a model for other continental and regional universities.