

Opening access to African scholarly content: Stellenbosch University's AOARI platforms

Africa is viewed as a consumer of the world's knowledge production. A significant factor influencing this status is the low research output, with the main contributor to this status being minimum access to scholarly content to support research. Stellenbosch University, a leading research institution on the African continent, is committed to contributing to changing this status quo through the distribution of its own research output utilizing open sources. Given the challenges that have plagued Africa in developing processes for the distribution of their research, Stellenbosch University has developed the African Open Access Repository Initiative (AOARI) which uses open source software for two platforms that support the 'green' and 'gold' route to sharing scholarly literature: Ubuntu is used as the operating system, DSpace is used for its repository and Open Journal Systems for its publication platform. It is anticipated that AOARI will be the bridge that facilitates the sharing of research output and nurtures a culture of research production in Africa.

Introduction

The transformation of scholarly literature from paper copy to the digital version has not improved access despite the ubiquitous nature of corroborative technology and its capacity to deliver scholarly literature anywhere and at any time. The exorbitant cost of subscriptions to scholarly literature has contributed significantly to restricting access¹. The implosion of access is of immense concern as results of publicly funded research are not freely available to the widest possible readership². This restricted access must also be viewed against the backdrop of the unprecedented way in which the web can facilitate collaboration in the production, dissemination and exchange of knowledge and information by scholars the world over, irrespective of their geographical location³.

The collusion of ubiquity and the web serves as the perfect foil for an alternative mode of distribution of scholarly literature and the radical improvement in access to such literature. This alternate mode, open access (OA), provides researchers with a conduit to make their research findings available to the widest possible audience and improve their research impact and visibility without compromising the integrity and rigour associated with quality academic publishing⁴.

There is great anticipation that the growth of the open access movement will radically improve access to the world's scholarly output; it will also serve as the impetus for networking the world of scholarship. One of the significant outcomes of this networking is the capacity to draw the 'south' (the 'developing world') to the epicentre of the world's knowledge production and facilitate the cross pollination of knowledge to and from the 'north' (the 'developed world') and south. In the current knowledge economy, open access presents Africa with opportunities to transform from a consumer of knowledge to a contributor to the world's knowledge production. Corroborating this assertion is the view of Mbambo-Tata who claims that 'by advocating for responsible sharing of digital content, open access presents Africa with an opportunity for bridging the information divide that has followed the same contours as the digital divide'⁵.

Against this background, the creation of the African Open Access Repository Initiative (AOARI) platforms, to foster sharing of African research content, will be discussed in this



REGGIE RAJU
Director, Client Services, Library and Information Service
Stellenbosch University, South Africa



INA SMITH
eRepository Manager, Library and Information Service
Stellenbosch University, South Africa



HILTON GIBSON
Systems Administrator, Library and Information Service
Stellenbosch University, South Africa

45 article. The authors will examine the rationale for the creation of the platforms with specific reference to the role of open access in changing Africa's low profile of research output: the importance of the platform in addressing Stellenbosch University's 'HOPE' mission and the need to strengthen higher education on the continent. Further, there will be an examination of the challenges that Africa faces in establishing and maintaining a repository and the role of AOARI in bridging the challenges.

The open access paradigm

Due to the constraints of space, this paper will not engage in detailed discussion on the concept of open access; suffice to say that it is literature that is in digital format, available online, free of charge, and free of most copyright and licensing restrictions. There is an explicit removal of price barriers to the end user (subscriptions, licensing fees, pay-per-view fees) and permission barriers (most copyright and licensing restrictions)⁶.

In an era of easy access to open source software, there are sufficient opportunities for libraries to utilize this software to enhance their role in collecting, organizing and disseminating the research output of their respective institutions. Academic institutions in developed countries are exploiting open source software in the development of their repositories. The question that begs an answer is why African academic libraries are not vigorously taking up opportunities that are presented by the open source movement. Further, a new role for the 21st-century academic library is that of engaging in the publishing processes, again, using open source software such as Online Journal Systems.

The benefits of open access, especially for the developing world, are enormous. However, in recent months there has been a transformation from the philanthropic base to an alternative business model for publishing. In this new and growing business model, the subscriber is exonerated from fees to access research findings. However, huge tolls are levied on authors (through author page fees) to publish in OA journals. These cost barriers leave a larger number of African researchers out in the cold. Uzuegbu summarizes the new quandary in which African scholars find themselves, when he points out that 'Africans paying to publish in UK will contribute in killing science in the region. With author charges sometimes outstripping the salaries of [African] researchers in many cases, researchers may have to balance the need for visibility and survival'⁷. Uzuegbu goes on to argue that scholars have to decide on funding author page fees at the sacrifice of other research expenses. It must be noted that, in the main, funding for research in Africa is meagre – these new exorbitant author page fees exclude the majority of Africans from publishing⁸.

Exorbitant author page fees perpetuate the status quo with limited opportunities for African researchers to publish in international forums that are also easily accessible to fellow Africans. The AOARI platforms present African researchers with the option of publishing in an open access platform at absolute minimum cost – the window of opportunity is thrown wide open for the widest possible distribution of content without the burden of infrastructural cost and the lack of skills.

Status of research output in Africa

Nwagwu aptly articulates the dire need for Africa to get onto the open access bandwagon when he claims that 'Africa remains, as though a *lake* of scientific information wealth – her rich information resources are scarcely harnessed and exploited, and seldom flowing out. The OAM [open access movement] may therefore be leaving behind developmental crumbs which Africa may struggle to pick up after the movement has begotten another ideology/ movement'⁹.

Despite the desperate need for trusted and relevant information for African development, Nwagwu and Ahmed make the point that sub-Saharan Africa has not made any significant contribution to the world's research output¹⁰. In fact, Africa has supplied only 0.7% of the

"... a new role for the 21st-century academic library is that of engaging in the publishing processes ..."

"... funding for research in Africa is meagre – these new exorbitant author page fees exclude the majority of Africans from publishing."

46 output with a very large percentage of that coming from South Africa. This statistic may well be a true reflection of scientific activities in Africa, however, there is sufficient evidence to suggest that the low profile of scientists in Africa is attributed to poor access to scientific publications¹¹.

This low profile is exacerbated by the fact that research conducted in Africa is not easily accessible to the international audience as the dissemination of African research content is severely prejudiced by the propensity of international publishers to focus on output from the north which generates larger profit margins. This prejudice relegates Africa further into the status of being a silent and invisible contributor to research production. Compounding the 'access drought' is the fact that research conducted in Africa and published in international journals is not accessible, due to financial constraints, to those researchers and other communities that need it the most. This anomalous situation can be addressed by employing open access processes that will allow for the free flow of scholarly literature to and from developing countries. Despite this anomalous situation, South Africa has broken through the glass ceiling and is the most significant producer of research in sub-Saharan Africa. South Africa produces 66% more than the second most research productive African country (see Figure 1)^{12,13}. Therefore, it is incumbent upon South African researchers and research institutions to contribute to bridging the 'research-exchange divide' between the developing and the developed world. Stellenbosch University, being a research intensive higher education institution and one of the leading academic institutions on the African continent, developed practices and policies to achieve its ambition of leaving a scientific footprint on the continent.

"...there is sufficient evidence to suggest that the low profile of scientists in Africa is attributed to poor access to scientific publications."

(For reasons of sensitivity, with the exception of the mention of South Africa, the authors do not provide names of the other African countries in Figure 1).

Stellenbosch University's HOPE Project

Stellenbosch University, recognizing its obligations as one of the leading research universities on the continent and one of the many catalysts for growth and development on the continent, conceptualized and adopted the HOPE Project¹⁴.

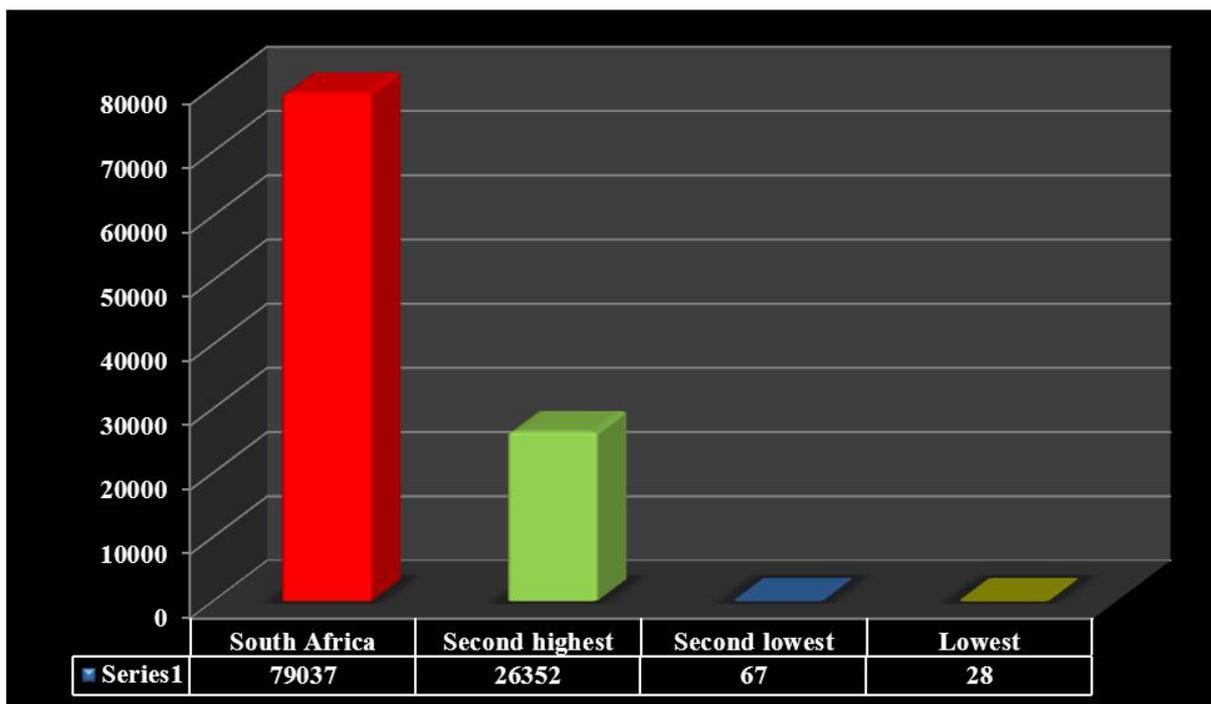


Figure 1. African research output 1999-2009: statistics extracted from SCOPUS

47 Through the HOPE Project, the University strives to utilize its state-of-the-art facilities and expertise to support the international development agenda focusing on the eradication of poverty and the promotion of human dignity and health, of democracy and human rights, of peace and security, and of a sustainable environment. The University is committed to, within these development foci, producing and sharing new knowledge to address African development issues¹⁵.

Strategic plans are extracted from the HOPE Project for each of the Vice Rectors of Stellenbosch University including the Vice Rector (Research) who has the strategic ambition of leaving a scientific footprint on the African continent. One of the five institutional strategic goals is to 'grow the knowledge base'. Within this strategic goal is an intervention which states: 'Supporting, developing and contributing to high-level scholarly publication output and sharing research data and results with the rest of the world, especially with researchers from the developing world'¹⁶ – specific reference is made here to sharing research findings with the developing world. In rolling out this strategic intervention, the Library and Information Service of Stellenbosch University has been mandated to develop platforms to improve the accessibility of the University's research output.

The implementation of this mandate must also be viewed against the backdrop of the growing trend the world over for libraries to offer a publishing service. This trend is confirmed by the latest report of the ACRL Research Planning and Review Committee^{17,18}. However, the development of the AOARI platforms is broader than the current trend: it is a melting pot of institutional, regional, national and continental repositories with possibilities of hosting journal titles that are published via the 'gold' route.

Given the low status of research output from Africa and armed with the ambition of wanting to leave a scientific footprint on the African continent,¹⁹ the Library and Information Service, at the behest of the University, developed the AOARI platforms.

African Open Access Repository Initiative (AOARI)

AOARI²⁰ is a 'hyper repository' for African academic and research institutions to share their scholarly literature with the widest audience possible. AOARI is split into two platforms to ignite, nurture and grow the support for publishing in both the green (that is, publishing in a repository) and gold (that is, publishing directly in a journal that is available via open access) open access routes. In keeping with the principle of 'openness', it uses open source software for both the platforms. The operating system used for both the platforms is Ubuntu (latest version 12.04). DSpace (version 1.8.2) is used for the repository platform and the latest version of Open Journal Systems (OJS) for the gold route publishing platform.

"AOARI is a 'hyper repository' for African academic and research institutions to share their scholarly literature with the widest audience possible."

The fundamental purpose of the repository is to provide a digital service that collects, preserves, and distributes research related digital material. The primary purpose of the publishing platform is to create a forum to facilitate 'self-publishing' without compromising academic publishing rigour; preserving content and radically improving the distribution of the scholarly content. In terms of the repository platform, each region (north, south, east and west Africa) forms the top-level community, with each country in the region being the second-tier community. Thereafter, the tier system cascades down from institution to collections created.

The way that the OJS platform works is that the editor-in-chief requests from Stellenbosch University (the super administrator) the creation of a template. The editor-in-chief then takes control of the title and applies custom templates for the entire publication process – from the call for papers to the distribution of the papers, to the reviewers, to the publication of the issue (and all of the processes in between).

Challenges to sharing content

Given the constraints of space and the abundance of discussions on the issue, it is deemed sufficient to provide a brief summary of the challenges facing academic and research institutions in setting up institutional repositories (IRs) in Africa. Some of the challenges include inadequate information and communication technology infrastructure, lack of qualified ICT staff to set up and manage the IR, inadequate funding, lack of awareness of open access institutional repositories among researchers and academics, unreliable power supply, inadequate advocacy and how to manage copyright and intellectual property rights through alternative publishing agreements^{21,22}. These issues are lavishly discussed in the literature^{23,24,25,26,27}. The focus of this paper is on the benefits of AOARI, which obviates some of the challenges listed above.

Benefits of using AOARI

The benefits of using the AOARI platforms must be viewed against the backdrop of the challenges that Africa needs to overcome to be an active contributor to the world's knowledge production. Within this challenge paradigm, AOARI provides options that could be utilized in growing a culture of research and sharing that research with the widest possible audience. Moving towards the epicentre of the world's knowledge production would allow for the cross pollination of research findings.

The benefits discussed centre around the core purpose of open access and that is to make research findings available to the widest possible audience thereby improving visibility, improving citation count and enhancing the prestige of the author and his/her institution.

Increase of African research on the web

Few people would contest that there is an increase in impact of open access scholarly literature as compared to offline, fee-based literature, whether in print or electronic format. The most persuasive reason for institutions setting up interoperable OA repositories, both in the developed and the developing world, is to increase visibility of research content. Concomitant with the increase in visibility is the increase in citation and impact. Scholarly literature that is made freely available in OA repositories tends to be cited more often than similar literature that can only be viewed by paying subscribers.

This increase in citation of OA content is affirmed by Agyen-Gyasi, Corletey and Tawiah Frempong, who state that 'open access articles are cited significantly more than non-OA articles, even when other variables are taken into account. The growing numbers of institutions and research funding organizations are starting to put in place requirements regarding open access'²⁸. The AOARI platforms offer African academic and research institutions an OA forum where their researchers can publish their research findings and improve their visibility on the web, and thus they act as conduits for African knowledge.

Visibility of young researchers

The costs associated with the utilization of the platform will be at an absolute minimum which enhances the capacity for young researchers to publish and share their output²⁹. Visibility of output from young researchers will be radically enhanced as the platforms were developed to optimize harvesting by the major harvesters (including Google), radically improving accessibility (or 'findability') making the research work of these young researchers more widely read.

The AOARI platform will more than boost the global visibility, it will nurture a new research culture focused on meeting international standards and values. It is an accepted fact that the current closed access publishing has failed to showcase the quality and quantity of research outputs from the developing world,

"The AOARI platform will more than boost the global visibility, it will nurture a new research culture focused on meeting international standards and values."

49 particularly those from African universities and scholars: the AOARI platforms will showcase quality African research and will provide Africans with relevant and authentic research to support the growth of further research.

Conclusion

Africa is trapped in two paradoxical situations. The first is that the production of research is dependent on access to research: African researchers have been hamstrung by limited access to relevant and authentic scholarly literature to support the growth in their research output. It has been mooted that the saviour to improved access is open access. This gives rise to the second paradox: open access removes the financial barriers to the end user. In this new paradigm, the cash-cow for publishers is now the author. However, African researchers, in the main, cannot afford exorbitant author page fees, limiting their capacity to publish in leading international journals that have an OA publishing option.

“For AOARI to be a success, there now has to be extensive marketing of the project ...”

Given this scenario, it is incumbent on research intensive institutions on the African continent to take the lead in sharing research findings to engender and nurture a culture of research at those African institutions that are plagued by low research output. Stellenbosch University, a leading research institution on the continent, is committed to sharing its output with the rest of Africa to support efforts to nurture an African research culture. In terms of the second paradox, Stellenbosch University has used its institutional skills and experience to develop the AOARI platforms that would require minimal publication costs, thus opening a window of opportunity for Africa to grow and showcase its research output.

The AOARI platforms also break down the barriers of lack of personnel skills and good ICT infrastructure, with the express mandate of supporting efforts to strengthen the culture of research in Africa. Such a strong culture of research will drive Africa from the periphery of the world’s knowledge production to the epicentre. The AOARI platforms have been created, and limited training has been provided at the Berlin 10 Open Access Conference in November 2012, held in Stellenbosch, South Africa. For AOARI to be a success, there now has to be extensive marketing of the project to ensure that the platforms are exploited en route to Africa becoming a significant contributor to global knowledge production.

References

1. Raju, R, Smith, I, Talliard, P and Gibson, H, Open access: are we there yet? - the case of Stellenbosch University, South Africa, *South African Journal of Libraries and Information Science*, Special open access launch issue, 2012, 1–19: <http://sajlis.journals.ac.za/pub/article/view/29> (accessed 27 November 2012).
2. Ivwighreghweta, O and Onoriode, O K, Open access and scholarly publishing: opportunities and challenges to Nigerian researchers, *Chinese Librarianship: an International Electronic Journal*, 2012, 33: www.idc.us/cliej/cl3310.pdf (accessed 28 November 2012).
3. Christian, G E, Issues and challenges to the development of open access institutional repositories in academic and research institutions in Nigeria, A research paper prepared for the International Development Research Centre (IDRC) Ottawa, Canada, 2008: <http://idl-bnc.idrc.ca/dspace/bitstream/10625/36986/1/127792.pdf> (accessed 27 November 2012).
4. Raju, R and Smith, I, Blazing new paths in open access for African librarianship: the contribution of Stellenbosch University. Paper presented at the 78th World Library and Information Congress: International Federation of Library Associations and Institutions, Helsinki, August 2012 (accessed on 27 November 2012) [Available from the authors].
5. Mbambo-Thata, B, Open access in Africa: seizing the opportunity for innovation in knowledge development. Paper presented at UNESCO: Economic Commission for Africa Second Session of the Committee on Development Information, Science and Technology (CODIST-II), 2 to 5 May 2011: <http://uir.unisa.ac.za/bitstream/handle/10500/3710/Open%20access%20day%20%20presentation%2020%20October.pdf?sequence=4> (accessed 29 November 2012).
6. Raju, R et al, ref. 1.
7. Uzuegbu, C P, Academic and research institutions repository: a catalyst for access to development information in Africa, Paper presented at the 78th World Library and Information Congress: International Federation of Library Associations and Institutions, Helsinki, August 2012: <http://conference.ifla.org/ifla78> (accessed 27 November 2012).
8. Uzuegbu, C P, ref. 3.

9. Nwagwu, W E, Open access in Africa: inches, pinches and dystrophies in the wellhead, Unpublished paper presented at the Berlin 10 Open Access Conference, Stellenbosch University, 7–8 November 2012.
10. Nwagwu, W E and Ahmed, A, Building open access in Africa, *International Journal of Technology Management*, 2009, 45 (1/2): http://www.inderscience.com/www/pdf/jitmv45n12_oainafrika.pdf (accessed 2 February 2012).
11. Raju, R et al, ref. 1.
12. Raju, R et al, ref. 1.
13. Ondari–Okemwa, E, Scholarly publishing in sub–Saharan Africa in the twenty–first century: challenges and opportunities, *First Monday*, 2007, 12(10): <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/1966/1842> (accessed 20 February 2012).
14. Botman, H R, Creating international knowledge coalitions to benefit society: the case of Stellenbosch University’s HOPE Project. Paper presented at the 6th International Forum of the Academic Consortium 21 (AC21), University of Adelaide, Australia, 12–14 June 2012: <http://www.sun.ac.za/university/Management/rektor/docs/20120612%20H%20Russel%20Botman%20-%20AC21%20-%20Knowledge%20Coalitions%20-%20paper.pdf> (accessed 29 November 2012).
15. Botman, H R, ref. 7.
16. Stellenbosch University, Strategic plan for the environment of the VR(R) 2011–2016: prepared by the management team of the Vice Rector (Research), Unpublished institutional document (accessed 27 November 2012).
17. Association of College and Research Libraries. 2012 top ten trends in academic libraries: a review of the trends and issues affecting academic libraries in higher education: <http://crln.acrl.org/content/73/6/311.full> (accessed 18 September 2012).
18. Newton, M, Open access library services: progress as publishers, 2012: http://www.berlin9.org/bm-doc/oapub_berlin.pdf (accessed 16 November 2012).
19. Stellenbosch University, ref. 16.
20. African Open Access Repository Initiative (AOARI): <http://ar1.sun.ac.za/> (accessed 15 January 2013).
21. Moahi, K H, Institutional repositories: towards harnessing knowledge for African development. Paper presented at the First International Conference on African Digital Libraries and Archives (ICADLA-1), Addis Ababa, Ethiopia, 1–3 July 2009: <http://wiredspace.wits.ac.za/jspui/bitstream/10539/8950/1/35%20Moahi.pdf> (accessed 27 November 2012).
22. Iwighrehweta, O and Onoriode, O K, ref. 2.
23. Christian, G E, ref. 3.
24. Jain, P, Bentley, G and Oladiran, M T, The role of institutional repository in digital scholarly communications: http://www.ais.up.ac.za/digi/docs/jain_paper.pdf (accessed 28 November 2012).
25. Mbambo-Thata, B, ref. 4.
26. Moahi, K H, ref. 21.
27. Uzuegbu, C P, ref. 7.
28. Agyen-Gyasi, K, Corleley, A and Tawiah Frempong, A, Open access institutional repositories: issues and challenges, 2010: <http://dspace.knust.edu.gh:8080/jspui/bitstream/123456789/1439/1/Open%20Access%20Institutional%20Repositories%20I.pdf> (accessed on 27 November 2012).
29. Mbambo-Thata, B, ref. 4.

Article © Reggie Raju, Ina Smith and Hilton Gibson and available under a Creative Commons BY- NC licence, published as an open access article by UKSG

Dr Reggie Raju

Director, Client Services, Library and Information Service

Stellenbosch University, Private Bag X5037, 7599, South Africa

Tel: +27 21 808 4641 | Fax: +27 21 808 3723 | E-mail: rraju@sun.ac.za | web: www.sun.ac.za/library

To cite this article:

Raju, R, Smith, I and Gibson, H, Opening access to African scholarly content: Stellenbosch University’s AOARI platforms, *Insights*, 2013, 26(1), 44–50, doi: 10.1629/2048-7754.26.1.44

To link to this article:

<http://dx.doi.org/10.1629/2048-7754.26.1.44>