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# ACCESS TO AFRICA'S KNOWLEDGE: PUBLISHING DEVELOPMENT RESEARCH AND MEASURING VALUE

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ABSTRACT: This paper reviews, critically, the discourse of research publication policy and the directives of the regional and global organisations that advise African countries with respect to their relevance to African scholarly communication. What emerges is a readiness to use the concepts and language of the public good, making claims for the power of technology to resolve issues of African development. However, when it comes to implementing scholarly publication policies, this vision of technological power and development-focused scientific output is undermined by a reversion to a conservative research culture that relies on competitive systems for valuing and accrediting scholarship, predicated upon the systems and values managed by powerful global commercial publishing consortia.

The result is that the policies put in place to advance African research effectively act as an impediment to ambitions for a revival of a form of scholarship that could drive continental growth. While open access publishing models offer solutions to the marginalisation of African research, the paper argues that what is also needed is a re-evaluation of the values that underpin the recognition of scholarly publishing, to better align with the continent's articulated research goals.

## Introduction

In July 2009, UNESCO convened the 29th World Conference on Higher Education under the rubric, *The New Dynamics of Higher Education and Research for Societal Change and Development*. This title was telling in a year in which the world had seen a major meltdown in the global economic system, creating a climate in which the question of higher education's contribution to the public good has become more prominent, in opposition to what the conference programme called 'poles of superior quality' and commercially-based competitive systems of innovation.[1]

This dichotomy was discussed in the trend report prepared for the conference, in which Altbach, Reisberg and Rumley (2009) identified the tension between pressure for research to be commercialised and a countervailing pressure to ensure that research contributes to the public good, as a critical problem facing research development and dissemination. This is a tension, they argued, that is likely to be aggravated by the economic crisis, which could generate the potential for reduction in government support for research, at the same time as there are increased social needs arising from the impact of the recession. In these circumstances, the critically important public good role of higher education, particularly in developing countries, risks being pushed aside by 'the rush for income and prestige', potentially leading to even greater inequalities in the global knowledge divide (Altbach, Reisberg & Rumley, 2009).

A persistent thread in the UNESCO conference programme documentation was the role that information communication technology (ICT) could play in enhancing higher education access for the poorer countries, enabling 'catch-up' and creating knowledge networks in such critical areas as poverty reduction, agriculture and public health. John Daniel,

1 http://www.unesco.org/en/wche2009/sub-themes/learning-research-and-innovation/

President of the Commonwealth of Learning, stressed in his speech the transformative potential of ICTs in enabling 'higher access, higher quality and lower cost all at the same time', drawing attention to the 'insidious link between quality and exclusivity' that prevailed prior to the advent of digital technologies and one that he hinted still persists in higher education thinking (Reddon, 2009).

There was a special session at this conference on higher education in Africa – *Promoting Excellence to Accelerate Africa's Development*. The South African Minister of Higher Education and Training, Blade Nzimande, addressed this session on behalf of the Conference of Ministers of the African Union. He opened his speech with a powerful statement on the persistence of the global knowledge divide. What was interesting is that he cast this statement, not in the way that this problem is most often addressed, as one of access to world knowledge by African researchers, but as a failure in the dissemination of and access to African research in Africa and in the world:

> *Although progress has been made in HE provision in Africa, it is obvious that over the last few decades some things have not changed. There has been no significant break in relations of knowledge production between the colonial and post-colonial eras. African universities are essentially consumers of knowledge produced in developed countries. In essence, what is being defined as 'knowledge society' means two different things to the developed world and the African continent. The former are the producers and the latter are the consumers of knowledge, which seriously undermines the fostering of the multicultural nature of Higher Education, as virtually all partnerships are one-sided.*
>
> *This is not only negative for the African continent, but it also deprives global higher education of access to the indigenous knowledge of Africa, and it deprives Africans of the opportunity to develop their indigenous knowledge system and strengthen their relationship to western and eastern knowledge systems.*[2]

The Namibian Prime Minister, Nahas Angula, followed up with a plea for the need to reconfigure the application of research in order for it to impact on the problems that African citizens face, asking: 'How could the application of knowledge end poverty and hunger in Africa? How could higher education empower women and promote gender equity? How can knowledge be considered in the African context to address child mortality and improve maternal health? (Reddon, 2009).

Nzimande's perception of an unchanging neo-colonial knowledge dispensation and Angula's concerns about the application of research to Africa's pressing problems are both very cogent, at a time when African higher education is trying to re-establish its prestige and importance, after decades of neglect. This neglect was the result of a combination of political and economic turbulence and World Bank policies favouring primary education rather than higher education as the most effective route to national development (Bloom, Canning & Chan, 2005). A global recession now complicates these issues further. On the other hand, the deep negative effect of the recession helps draw attention to the failures of global, liberal economic theories. As a result, there is an emerging need to redefine the values that underpin recognition and reward systems for universities, their researchers and their outputs, and to align them with public good goals.

2 The text of the speech can be found at http://www.education.gov.za/dynamic/dynamic.aspx?pageid=306&id=8720

With the importance of African research production now high on the agenda of regional organisations, such as the African Union (AU), the New Partnership for Africa's Development (NEPAD), and the Southern African Regional University Association (SARUA), the questions raised at the 2009 UNESCO conference provide a cogent outline of the issues that are problematic for African research publication. The questions that need to be asked are: Why is there continuing marginalisation of African research publication, to the detriment of the development goals targeted by higher education policy? And what are the reasons for the persistence of a commercially-driven, neo-colonial scholarly publishing culture that continues to be subscribed to by African countries? Is African research policy creating an enabling environment for ICT to be effectively harnessed to ensure maximum access to relevant and high quality African research, at the lowest possible cost, as Sir John Daniel envisaged? And what choices are being made between the competitive, commercially-driven systems of scholarly prestige and the need for research to address the public good?

What is certain is that African research publication has fared badly in terms of the conventional measures of competitive, global publication performance. The most commonly applied standard for measuring the effectiveness of research output and the prestige of scholars and universities is the level of publication of journal articles in the Thomson Reuters ISI Web of Knowledge indexed journals[3] and the citation counts of these articles. In the case of Africa, the figures demonstrate the overwhelming dominance of South Africa, which produces close on 80% of the region's research outputs in the ISI indexes. Moreover, there has been a decline in research outputs from most other countries in Southern Africa in the last decades. In traditional print publication and online provision of both formal publications and informal communications, Africa has fallen behind the rest of the world in its contributions to global scholarship. The output of journal articles published by African authors, and journals and books published in Africa, is very low (Gevers & Mati, 2006; Mouton et al, 2008; Butcher et al, 2008).

The publication of research in this system is overwhelmingly dominated by a few rich countries in the global North. In a study of the performance and ranking of the world's leading science producing countries in the ISI journal indexes, King revealed the top four countries – the USA, the United Kingdom, Germany and Japan – produced 84% of the articles concerned, while at the other end of the scale, 163 other countries accounted for only 2.5% (King, 2004; see also Chan & Costa, 2005; Willinsky, 2006). The only African country reported by King in the list of the top 100 countries ranked in ISI was South Africa and it had just 0.5% of the articles in the combined ISI databases, and 0.15% of the most cited papers (King, 2004; Gevers & Mati, 2006). In 2005, South Africa published 23 journals that were accredited in the ISI. Other African countries fared much worse: Egypt and Kenya at that stage had one journal each (Gevers & Mati, 2006).

When it comes to access to Africa's research outputs across the continent, Nzimande's pessimism is borne out by recent research into access to knowledge in Southern African universities carried out by SARUA. This revealed a high level of consensus among

3 This is a series of listed journals selected as the world's 'core' journals and is designed to exclude the need to subscribe to 'unnecessary or extraneous databases', (http://wokinfo.com/about/whatitis/). There are other citation indexes, such as Elsevier's Scopus, but the ISI Web of Knowledge tends to be the standard for the establishment of scholarly rankings in Africa.

administrators, academics and librarians that research outputs from across the region are simply not accessible or available to Southern African institutions. In fact, one finding was that researchers often did not even know what was being produced in their own institutions. As far as access to African research was concerned, a number of constraints were identified, including a lack of awareness of what is being produced in African countries and the predominance in African research of unpublished research outputs in the form of reports and technical papers, conference proceedings and working papers that were not being curated and were therefore not readily accessible (Abrahams et al, 2008). In other words, a good deal of research that could make the contribution to community development that Angula was seeking, in his speech at the UNESCO conference, is being rendered invisible.

This paper reviews, critically, the discourse of African research publication policy and investigates the reasons for the failure by African researchers, described above, to find a voice in global research publication, either in the formal system of global scholarly publication or in the effective dissemination of development-focused research output. The paper argues that the ambitions of African policy-makers for a higher profile for African research and for development impact from research output are being undermined by continued adherence to a 'traditional' publishing system that could be held guilty of the neo-colonial attitudes that Nzimande complained of. This publishing environment depends upon a proprietary copyright system and a value system that places publication in the global North at the top of the hierarchy and publication in Africa at the bottom (Gray, 2007; Abrahams et al, 2008). The result has been to entrench value and reward systems for the recognition of scholarly achievement (at the level of universities and individual researchers) which, this paper argues, effectively undermines the potential for African research publication to raise its profile and to contribute to the public good.

## Perspective on research policy discourse

The formulation of policy for the revival of African research from the 1990s onwards is to be found principally in reports produced by international agencies, such as UNESCO and the World Bank (Bloom et al, 2005; UNESCO, 2005), African continental organisations (NEPAD, 2006a and 2006b) and post-apartheid South African policy formulation (Gray, 2008). In these documents there is a readiness to use the concepts and language of the public good, in particular making claims for the transformative potential of the technology revolution. This particular strand in the policy literature is forward-looking, acknowledging the changes that are being brought about by Internet communications. This is usually framed as a recognition of the importance of participation in the knowledge economy or the networked knowledge society.[4] A typical example from South Africa's White Paper on Science and Technology (DACST, 1996) sees this technological shift in communications media as a way for research to reach into the community:

> *The world is in the throes of a revolution that will change forever the way we live, work, play, organise our societies and ultimately define ourselves .... [t]he ability to maximise*

4 Although these terms are often conflated in the policy literature, they are separate and different concepts: the knowledge economy refers to a perception of the importance of knowledge in the production of wealth, while concepts of the knowledge society deal with the role of the Internet in a world of decentralised and collaborative communications.

> *the use of information is now considered to be the single most important factor in deciding the competitiveness of countries as well as their ability to empower their citizens through enhanced access to information.*

In a similar vein, UNESCO's report *Towards Knowledge Societies*, stresses the need for shared knowledge and knowledge diversity in the networked world, with major benefits of developing societies and the creation of 'a human, sustainable and shared development' (UNESCO 2005:145). Yet, the empowering vision articulated in these statements has remained elusive for African scholarly researchers. It has not resulted in increased reach, nor in increased impact for their publications. What is also striking in this statement – and others like it – is a conflation of the commercially-driven ethos of the knowledge economy, which the White Paper correctly perceives to be a competitive system of rankings of excellence, with the empowering potential of the networked knowledge society. The latter, Guédon points out, is more than just a historical phase in knowledge development, but is also creating a more emancipated political dispensation (Guédon, 2008), a point that Benkler endorses in his analysis of the human rights potential of the networked knowledge society (Benkler, 2003b).

When it comes to implementing scholarly publication policies in Africa that could help reverse the digital divide, this vision of the potential of technology to deliver development-focused scientific output is undermined by a reversion to a conservative understanding of what constitutes scholarly publication. The latter relies on a narrow vision of the range of scholarly publication – journal articles and scholarly books – and on a reliance on competitive metrics for valuing and accrediting scholarship, predicated upon the journal indexes and citation systems managed by powerful global commercial publishing companies (Guédon, 2001 and 2007). This is exactly the competitive innovation culture and 'poles of superior quality' warned against in the 2009 UNESCO conference documentation, described at the outset of this paper. In this regard, there is a puzzling circularity in a number of policy documents, in which enlightened discussion of the potential of a new and more democratic knowledge society concludes with recommendations for the implementation of benchmarks for evaluating scholarly performance that depend upon numerical counts of copyrights and patents. In this discourse, which is seldom interrogated, 'research outputs' appear to mean journal articles, scholarly books and patents.

Untangling the different strands of the policy discourse of research communications in Africa is made more difficult by the fact that the policy initiatives for the revival of African scholarship have taken place over a decade and a half of rapidly shifting global research communications. New technologies have impacted on the way research is conducted and this, in turn, has produced changes in scholarly communication products. One result has been a growth in informal and open communications, including reviews, pre-prints and working papers, data, blogs, and discussion forums (Maron & Kirby-Smith, 2008). Collaborative and inter-disciplinary research has become more important and applied research has gained greater importance (Houghton, Steele & Henty, 2003).

These developments should appeal to the aspirations of African policy-makers for research publication with the potential to address development concerns. The collaborative and open research approaches and the wider range of outputs emerging in a changing research environment offer potential for development impact that cannot be achieved through the

restricted scholar-to-scholar communication offered by journal articles. In fact, a number of African research councils and research centres have, for some time, produced online research and technical reports, policy papers and community-focused resources that are targeted at achieving development impact in fields such as agriculture, poverty relief, public health and community law. However, what tends to happen at government and institutional level is that, when it comes to policy for scholarly publishing, this wider range of communication outputs is sidelined in favour of the pursuit of citation metrics for articles published in international journals as the single measure of successful performance. This appears to be a catch-22 situation. While regional and national policy demands that the universities contribute through their research to social and economic upliftment – and universities are often criticised if they fail to achieve this goal – the publications that would be the most effective means of mediating research results for development impact are disregarded.

This narrow view of what constitutes valid research output ignores the expanded horizon of scholarly communication in the 21st century. It also ignores the potential for expanded conceptions of research communications, in a networked digital world, to address social and development needs, in ways that traditional and formal publication genres have not been able to do. This potential is being recognised in the increasing attention being paid to national and international policies for access to research, and by the adoption of open access licences, and expanded and open research publication programmes, by leading international universities such as Harvard, Stanford, California and MIT (Suber, 2009). Catherine Candee, of the University of California, discussing the university's research publication strategy, saw this as an essential component of a university's role in a digital world (Candee, 2008):

> *In the digital realm, there is no reason to plan to enhance scholar to scholar communication without considering how to improve the knowledge, the creation and scientific output of the university to the public. This is not just for the individual public interest and good - universities must aim to meet the challenges of modern society. How better than to ensure that we have an adequate publication and communication system?*

However, all too often, in African universities, this potential is short-circuited by the persistence of an older publishing system. There is a familiar mechanism at work here: a review of current scholarly publishing models from the US Association of Research Libraries (ARL) describes this reversion to traditional publishing models as a common reflex in a rapidly changing environment:

> *The urge to consider new forms in comparison to the monograph and journal genres that dominate library collections and the consciousness of the Academy is powerful. Yet this frame for interpreting changing practices of scholarly communication carries the risk of falling into a certain circularity of thought - we may acknowledge that scholarly works will change and yet behave as if anything that does not look like a traditional work of scholarship is not a scholarly work; thus the immutability of traditional publishing models becomes axiomatic. Different becomes less by definition* (Maron & Kirby Smith, 2008).

This 'circularity of thought' is what happens repeatedly in development-focused and African research communications policy. And so, for example, NEPAD, with a strongly

developmental vision for African higher education, nevertheless privileges journal publication and patents as principal indicators for the success of the system (NEPAD, 2006a), as does South African policy, with its financial rewards for the publication in 'accredited' and indexed journals. In general, journal articles, particularly in journals in the ISI indexes, are privileged as the single most recognised and rewarded scholarly output. These are for the most part commercial subscription journals with 'all rights reserved' copyright, often with high subscription prices and limited circulation in Africa. The result is a limitation on the extent to which African researchers can create a collaborative base for developmental research relevant to African priorities. This is a result of the bias of the journal publishing indexes against work from the developing world and because of the exclusion of applied research outputs in the hierarchy of what type of publication outputs are recognised and rewarded in most higher education systems. This has the effect of pushing much African research to the periphery.

### Hegemony of the big journals and commercial publishers

In a recent critique by Zoe Corbyn on the hegemony of the big journals, published in the *Times Higher Education Review*, Richard Horton, the editor of the *Lancet*, is cited as describing how, if he chose to publish African authors, this might reduce the citation impact of his journal. The most cited articles in medical journals, he argues, are studies of randomised trials from rich countries and if he published African authors, these articles would score fewer citations:

> *The incentive for me is to cut off completely parts of the world that have the biggest health challenges ... citations create a racist culture in journals' decision-making and embody a system that is only about us (in the developed world).* (Corbyn, 2009).

Corbyn's critique and Horton's comment about the implicit racism of journal publishing citation counts are part of a rising tide of criticism that recognises that the indexing systems that underpin the competitive rankings with their claims of 'universal' excellence are neither universal nor some kind of natural good. They are, rather, the product of a closed system, with its own rules of the game, dominated by commercial companies that depend upon the control of intellectual property rights for the commercial exploitation of scholarly publication. This is also an environment with a set of values and interlinking hierarchies, not always acknowledged by the universities that participate in the system, that identifies knowledge that is relevant to the global North as 'universal' (Guédon, 2007); ranks developmental and applied research below basic research, and perceives the public good as best achieved through commercialisation via intellectual property protection and patenting (Gray, 2007).

In reality, the commercial journal publishing empires that underpin this system are of recent date, a product of the growth in the importance and commercial value of science in the 20th century knowledge economy. Responding to the recognition that there were now financial opportunities in the expanding terrain of scientific knowledge production in post-war Europe and the USA, large-scale commercial publishers progressively replaced the learned societies and other small publishers who had until then dominated journal production (Guédon, 2001). In the wake of the massification of higher education in the 1960s and 1970s, these commercial publishers consolidated and progressively took over control of the quality systems for scholarly publishing, using commercial muscle to build dominant

journals that were perceived to be necessary channels for the publication of leading research, to which libraries would have to subscribe. This dominance was facilitated by the application of Bradford's Law, which was developed in 1934 for librarians struggling with budgets during the Great Depression. It was intended as a tool for estimating the diminishing returns of extending a search for references in science journals. This in turn led to Garfield's concept of the 'core science' philosophy that was adopted in what became the hugely influential ISI Science Citation Indexes in the 1960s, now owned by Thomson Reuters.

Not surprisingly, the 'core' journals were progressively acquired by commercial publishers who now own the majority of journals in the journal indexes, with Elsevier alone controlling around 20% of them (Guédon, 2001). The acceptance of the core journal system by governments and university administrations across the English-speaking world has, as Guédon argues, created a situation in which 'a private company … Thomson Scientific – unilaterally, and largely unaccountably, decides how many journal titles will be included in its basic list and everybody else abides by its decision' (Guédon, 2007). Accompanying the rapidly increasing consolidation of publishing, with major journals in the hands of fewer and fewer publishers, have come steeply rising prices. As Houghton reports, from an Australian perspective: 'Between 1986 and 1998, the number of journal subscriptions in Australian university libraries declined by 37%, but expenditure on them increased by 63% and the unit cost of journals increased by a staggering 474%' (Houghton, 2001).

It also needs to be remembered that this knowledge economy commercial publishing model is dependent upon the control of intellectual property rights (IPR) for the generation of profits. It is standard practice for authors of scholarly journal articles to cede copyright to the publisher. This has meant that more and more of the research content produced in the world belongs to large media conglomerates in the global North which have a vested interest in advancing increased enclosure of IPR. The high price of international journals makes it difficult for even the richest universities in the global North to afford subscriptions to the full range of scholarly journals (Schieber, 2008), let alone African libraries. This effectively cuts African researchers off from access to research developments and debates in crucial areas such as health and agriculture. In the 75 poorest countries, 56% of institutions have no subscriptions at all to medical journals (Chan et al, 2009).

The creation of these commercial publishing empires has pushed developing countries – defined in this system as 'peripheral' and 'local' and unable to afford the subscription costs to these journals – even further to the margins in an already unequal global knowledge system. When the ISI deliberated the presence of publications from Third World countries in the index in 1982, the decision was to evaluate only their 'contribution to world science', rather than (also) including work on matters of 'merely' national or regional significance (Guédon, 2007).

In these circumstances, African publications – at best perceived as marginal – have practically no chance of being taken up by international institutional subscribers, in either print or electronic format. African scholars – and scholars from other parts of the developing world – equally have limited chances of having their articles published in the indexed journals. The bias of the Thomson Scientific and IBSS journal databases is clearest in those places where knowledge is most likely to be regional. Steele, Butler and Kingsley (2006) make it clear that there are specific subject areas that suffer from a lack of coverage

as a result. Much of the social science and humanities research carried out in African countries has, by its very nature, a national or even regional focus, and is likely to be of interest to other developing countries, rather than the global North, which means that literature relating to these disciplines is unlikely to appear in the international indexes (Gevers & Mati, 2006). Even more damagingly, vitally important research fields are neglected, such as research into diseases that affect millions of people in the poorer parts of the world (now, in an interesting turn of phrase referred to as 'neglected diseases' in forums such as the World Intellectual Property Organisation).

It is interesting to note, however, that in May 2008 Thomson Scientific released a press statement announcing the addition of 700 'regional' journals to their online database 'Web of Science', after two years of evaluating such titles. According to the Thomson Reuters press release,[5] '[t]he newly identified collection contains journals that typically target a regional rather than international audience by approaching subjects from a local perspective or focusing on particular topics of regional interest'. This resulted in the inclusion of 19 more journals from South Africa, one from Nigeria and one from Kenya.[6] While this move is to be welcomed, the language of the announcement still reveals a vision that reflects the view from the global North: the project is designed to provide a regional perspective for the evaluation of research trends and 'builds a bridge between significant regional studies and the global research community'.[7]

This move by Thomson Reuters might well be a response to a rising tide of criticism of the system, the growth of open access publishing, and increasing discussion by the developing world (which makes up more than 80% of the global population) about alternative publishing models and the creation of scholarly indexes that could measure regional and national impact factors. In Latin America, the SciELO consortium is developing scientometric tools for regional scholarship, and China is developing its own citation index (Guédon, 2007). The Academy of Science of South Africa has forged a partnership with SciELO to create SciELO South Africa, a platform for the open access availability of the leading South African journals, tagged according to a SciELO-developed system for measuring regional and national impact.[8]

## Fields of promise for access to scholarly communications: Budapest and beyond

The promise of a more democratic knowledge environment has been recognised for a number of years. In 2001, for example, under the auspices of the Open Society, a group of the leading thinkers interested in the potential for change from what was still a relatively new Internet environment, met in Budapest to discuss what this was going to mean for scholars and researchers in the global knowledge society. Their collaboration resulted in the Budapest Open Access Initiative (Soros Foundation, 2001), which has remained the standard statement on this future vision:

> *An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment,*

5 http://scientific.thomsonreuters.com/press/2008/8455931/

6 http://isiwebofknowledge.com/currentuser_wokhome/wos_jnl_expansion/ma/

7 http://isiwebofknowledge.com/currentuser_wokhome/wos_jnl_expansion/

8 http://www.scielo.org.za

*for the sake of inquiry and knowledge. The new technology is the Internet. The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds.*[9]

The vision of the public good that emerges in this statement is not simply a matter of ensuring public benefit from taxpayer-funded scholarship, but was underpinned by an understanding of the deeper changes in economic and political systems that would result from the Internet revolution. What the Budapest Initiative argues for is a shift to a vision of the enormous potential offered by the new technologies for collaborative modes of production, of the use of technology for sharing and peer production as a 21st century route to gaining benefit from research.

Underpinning this vision is the recognition that the 20th century knowledge economy, which was built on the importance of the commercial exploitation of knowledge as the key driver of the modern economy, is being challenged by new possibilities for democratic and open global networks for knowledge dissemination in the global networked knowledge society. The Internet in the 21st century offers the potential of radically decentralised participation in communications. Pervasive networked Internet communications, using low-cost processors, allows for non-market production and increased participation by citizens at all levels in the production of value (Benkler, 2003a, 2003b, 2006; Guédon, 2008). As Benkler writes in his seminal book, *The Wealth of Networks*:

*The change wrought by the networked information economy is deep. It is structural. It goes to the very foundations of how liberal markets and liberal democracies have coevolved for almost two centuries. A series of changes in the technologies, economic organisation and social practices of production in this environment has created new opportunities for how we make and exchange information, knowledge and culture. These changes have increased the role of non-market and non-proprietary production, both by individuals alone and by cooperative efforts in a wide range of loosely or tightly woven collaborations* (Benkler, 2006: 1–2).

The rise of the knowledge society, therefore, offers the advantages of more democratic values, delivered through collaborative and shared research that are of particular importance to developing countries, especially as they find themselves at a disadvantage in access to technology and information networks in the cut-throat world of the knowledge economy. The concomitant rise of knowledge societies in Africa and the developing world offers opportunities to democratise the production and dissemination of knowledge, away from the domination of the media conglomerates of the global North.

The open access publishing models that have developed in the wake of the Budapest Initiative in the first decade of the 21st century are increasingly being embraced by international organisations, national governments, donor agencies and universities across the world. This is because they offer greater potential for democratic access to information and knowledge and increased research impact on development (Suber, 2009). There have been a number of other declarations, including the 2003 Berlin Declaration on Open Access

9 http://www.soros.org/openaccess/read/shtml

in the Sciences and Humanities,[10] the Bethesda Statement[11] on open access (2003) which focuses on biomedical research, as well as the Salvador Declaration (2005)[12] and the Bangalore Statement[13] (2006), which take a developing-country view.[14] According to the Salvador Declaration, for example:

> *Open Access must facilitate developing countries' active participation in the worldwide exchange of scientific information, including free access to the heritage of scientific knowledge, effective participation in the process of generation and dissemination of knowledge, and strengthening the coverage of topics of direct relevance to developing countries.*

Open access is perceived in these declarations as a way of making research knowledge and the cultural heritage globally accessible; a way of creating an interactive international scholarly community, and sharing knowledge to create greater efficiencies in research. Their signatories include institutions, organisations and individuals from across the globe. An increasing number of governments, public institutions and donors have developed policies that advocate public access to the research they support and fund. The European Union (EU) has recommended 'guaranteed public access to publicly funded research shortly after publication' and also recommends a role for government and research bodies in ensuring 'a level playing field' in terms of business models for publication, promoting electronic publication and finding support for publications that might not be economically viable (EU, 2006: 88–89). This has stimulated intense debate, with the publishing industry lobbying the EU, and academic institutions submitting a petition in support of free access (EU, 2006: 17–19).

A number of research agencies are now asking for open archiving of the research they fund. The National Institutes of Health in the USA has a mandate, enforced by federal law promulgated in 2008, providing for archiving of the research it supports within 12 months of publication and the UK Research Councils ask that funded researchers deposit a copy of their research in an archive. The Australian government's Productivity Commission produced an extensive report in 2007 on commercial and open approaches to science and innovation, with detailed and wide-ranging recommendations for open access dissemination of research information, emphasising the academic, social and economic benefits that this would bring to the country (Productivity Commission, 2007).

The Budapest Open Access Initiative defines open access publishing as follows:

> *There are many degrees and kinds of wider and easier access to this literature. By 'open access' to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, 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*

10 http://oa.mpg.de/openaccess-berlin/berlindeclaration.html

11 http://www.earlham.edu/~peters/fos/bethesda.htm

12 http://www.icml9.org/channel.php?channel=91&content=439&lang=en

13 http://www.ncsi.iisc.ernet.in/OAworkshop2006/pdfs/NationalOAPolicyDCs.pdf

14 A full list of the various open access declarations and statements is provided in the Open Access Directory: http://oad.simmons.edu/oadwiki/Declarations_in_support_of_OA

*to give authors control over the integrity of their work and the right to be properly acknowledged and cited* (Soros Foundation, 2001).

Exploiting the low cost of online distribution, as Sir John Daniel recommended at the 2009 UNESCO conference, open access publication takes advantage of the potential of new technologies in order to open up the dissemination of scholarly literature to wider audiences, making knowledge available as the foundation for further research and development. Open access online publication allows for the use of research content for educational purposes and some open licences can permit reworking and translation to extend the impact of science to communities of various kinds, in the way that Angula sought in his conference speech. For African countries seeking maximum benefit from their limited resources for research development, this has obvious advantages. Moreover, there is a substantial and growing evidence of the increased impact of open access publication compared to conventional print or digital publishing. Houghton and Sheehan, reviewing the economic effect of enhanced impact from an Australian perspective, cite a number of studies that have demonstrated the open access citation advantage, showing differences between the mean citation rates of open-access articles and articles that are not freely available online. In physics research, this can be from 2 to 5.8 times higher, and it ranges, in other disciplines, from 45% higher in philosophy, and 51% in electronic and electrical engineering, to 86% higher in political science and 91% in mathematics (Houghton & Sheehan, 2006: 4 – citing various sources).

As open access publication has grown, increasing volumes of research are being made available worldwide. Chan, Kirsop and Arunachalam (2009) emphasise the need for this to include knowledge from the developing world. 'Without the input of knowledge from the disadvantaged regions, development initiatives may suffer from inappropriate programmes', they argue, citing as an example tuberculosis vaccine development, which needs to respond to genetically different isolates from different regions. The authors advocate the use of open access archives both in institutional repositories and in international directories such as Bioline International,[15] as a way of raising the visibility of developing-country science. This strategy, as well as the development of open access publications, has worked particularly well in providing access to the research output of transitional economies such as Brazil, China and India, which has increased considerably in the past decade.

## Landscape for open access in Africa

As far as Africa is concerned, there is an opportunity to build on existing initiatives. There are a growing number of archives and repositories of scholarly content on the continent – there are now 30 repositories in Africa listed in the Open Doar directory.[16] The African Academies of Science are promoting the development of open access models for African research publication; the South African Academy is in the lead with a programme in partnership with SciELO in Brazil for the building of a scholarly journal platform. CODESRIA, the pan-African social science research organisation, publishes a number of open access

15 Bioline International is a not-for-profit organisation that provides open access for quality research journals from developing countries http://www.bioline.org.br

16 http://www.opendoar.org

journals and books. Perhaps the most notable example of successful, development-focused, open access research publishing on the continent, however, is the Human Sciences Research Council (HSRC) in South Africa. The HSRC Press, which operates a dual stream, open access online and print publishing model, has achieved exposure for its publications worldwide, with high levels of downloads. Its publications have become the first option for scholars and policy-makers seeking information on social science research in southern Africa and the quality of its publications is widely recognised.[17]

However, if African governments and universities are to take full advantage of the benefits offered by open access publication, attention must be paid to the values that currently underpin scholarly publishing policies, and a better alignment should be sought with the continent's strategic goals. Building on the idea of the creation of measurements of value that could better reflect Africa's concerns and making the most of the potential of ICT for the creation of open online research resources, Africa could achieve the value that arises from collaborative and participative research. Such approaches could reduce the barriers that currently limit access to the knowledge generated on the continent and maximise the potential for African research to impact on the public good.

## Conclusion

As African organisations have sought to revitalise the continent's research infrastructure, the two most common themes have been the need for research to contribute to development and the need for the quality of African research to achieve global recognition. When it comes to the publication of African research, this paper has argued that the imperatives of global competitiveness have been dominant, expressed as a desire for African research to be published in 'mainstream' journals, of 'global' quality. This search for excellence, as Guédon argued at an African scholarly publishing workshop in Cape Town in July 2009,[18] needs to be distinguished from the search for quality. Excellence is not just very good quality, he suggested. The concept of excellence is a matter of competition, with specifically defined parameters creating the rules of the game in which this competition is played out. It is a system for creating hierarchy. In the case of scholarly publishing, the rules of the game determined by the large multinational publishers favour the global North over the developing world and the values of the knowledge economy over the more developmental values of the knowledge society.

These ideas are beginning to be taken up in Africa and worldwide. Nzimande, for example, has suggested that social impact and not citation metrics should be the basis for the measurement of research excellence:

> *Our universities, in particular, should be directing their research focus to address the development and social needs of our communities. The impact of their research should be measured by how much difference it makes to the needs of our communities, rather than by just how many international citations researchers receive in their publications. Therefore, in awarding excellence in research due consideration should be given to how much change has happened as a result of research from our institutions of higher learning, including improving the living conditions of the majority of our people, most of whom are women.*[19]

17 http://www.hsrcpress.ac.za

18 This was a workshop to frame the scoping of a project for the development of African scholarly publishing, convened by the International Development Research Centre and the Shuttleworth Foundation.

19 Speech to the Women in Science Awards, Johannesburg, 21 August 2009.

On the global front, the award of a Nobel Prize to Elinor Ostrum is an indication of greater attention being paid to social, moral and political values in the world than to economics alone and to the commons rather than to rivalrous resources (Bollier, 2009). In this period of economic crisis, Amartya Sen's arguments for the measurement of human freedoms and capabilities rather than only economic factors are becoming more pervasive (Sen, 1999). The affordance of digital research communications and the values of the networked knowledge society should provide space for African universities to review their scholarly publishing policies and practices, in order to better reflect both the need to achieve research excellence and quality standards for development-focused research. ❑

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