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Bridging the North-South Divide in Scholarly Communication: Threats and Opportunities in the Digital Era

At the South-eastern Frontier: the impact of higher education policy on African research publication

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ABSTRACT

Digital media, with their capacity to reduce the cost of information dissemination and to effortlessly cross borders, offer new possibilities for overcoming the marginalization of African research publication in the global community. In turn, Open Access publishing models show signs of generating substantially greater research impact and increasing citation levels, particularly for publications from the developing world.

This paper will tackle a relatively neglected area of study - the policy context in which research publication happens in African universities. In particular, it will map the contradictions and distortions that occur when national research policy initiatives targeting development goals meet up with policies for publication reward systems that effectively drive publication – even of African Studies – out of Africa into the USA and Europe.

The context of the paper is a research programme that I am carrying out as an International Policy Fellow in the field of Open Information Systems in the Open Society Institute. This is a qualitative study, exploring research and research dissemination policy and practice in South Africa and comparing this with other African countries. African policy and practice will in turn be critically examined in the light of global debates challenging the complacencies of traditional publication and tenure systems and positing new approaches to research dissemination, new sustainability models and peer review mechanisms.

Tracking the problems inherent in the traditional 'publish-or-perish' scholarly publishing system to which African universities continue to subscribe, the paper will explore the potential offered by Internet publication and Open Access publishing models for African scholarship.

Recommendations are made for policy initiatives and publishing models that might help strengthen the voice of African scholarship globally.

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At the iCommons Summit in Rio in June 2006, Brazilian Minister of Culture, Gilberto Gil gave delegates a lyrical account of his world view, as well as – unusually for a Cabinet Minister - singing a few choruses for his audience. He challenged developing nations to embrace their own 'tropicalisms' and to use the latest technologies to make their voices heard globally, projecting their own knowledge and culture into the global arena. Acknowledging the paradoxical nature of this enterprise, one of the things he said was, ' I am still cultivating this strange and provocative taste of bringing together ideas that seemed to be bound to be eternally separate... I like to see the world echoing just like the head of a *berimbau*. I like to connect the differences.' The challenge that he and other South American speakers at the conference threw down was for developing countries to learn to make the leap from the 19th to the 21st century, bringing together their own traditions of knowledge and culture and the potential offered by new technologies and new ways of working.

Africa urgently needs to be able to meet this challenge. My starting point in this paper is a recognition of the marginalization of African research in the global knowledge economy, particularly of African research produced by Africans, out of Africa. If Africa is to meet its urgent development needs, this is a situation that needs to be reversed. African universities (with the exception of South Africa) have been radically undermined by decades of structural adjustment programmes, starved of resources and struggling to retain staff and carry out research, let alone publish or disseminate that research. Now, suddenly, policy development for African research has moved to centre stage. Firstly, the World Bank has changed direction and identified higher education as a key driver for African economic growth and poverty eradication (Bloom, Canning and Chan 2005). It appears that substantial funding will be released to try to restore an African higher education sector. Now NEPAD has called for input from African universities into the creation of an African Science and Innovation Facility for the funding of research initiatives across the continent (<http://www.nepadst.org>) It is likely, therefore, that higher education policy development in African countries will enter a boom period.

The challenge that such a process poses cannot be underestimated. It can too easily be forgotten that research policy-making is not only a matter of investigation, consultation, setting targets and creating outcomes measurements, but that policy-makers need to be able to 'discern, based on their expert knowledge, the future trajectories of the subject and the interventions which might improve its development' (NEPAD 2005). Or, as Arie Rip spells out in his discussion of South African R&D policy and the African Renaissance:

The common mimetic route is to define the nature of capacity-building in terms of what is now seen as important. This may well be a recipe to become obsolete before one's time...

[T]he world (of science and more generally) may well evolve in such a way that present-day exemplars will be left behind. So developing countries should set their sights on what is important in 2010, rather than what appears to be important now – however difficult this will be politically. (Rip 2000: 67)

This problem becomes even more acute when it comes to my topic – that of research publication and dissemination. Although new modes of research dissemination are the subject of lively debate worldwide² and the object of a wide range of policy initiatives³, scholarly publishing as a topic for discussion and re-evaluation seems to have largely dropped below the policy radar in Africa, as in many other developing country contexts. In a sense, this is strange, given that the research and innovation policy initiatives being undertaken in Africa are clearly influenced by theories of the knowledge economy and the network society (Benkler 2006, Castells 2000, Gibbons 1998; Kraak 2000, Cloete et al. 2004, Zeleza and Olukoshi 2004) and it would seem obvious that knowledge dissemination should be a critical component of development-focused African R&D policy. Two broad reasons emerge for the failure to address research dissemination: one is that development discourse that dominates innovation policy has tended to be instrumentalist, particularly on the African continent. This has resulted in a primary focus on research/industry collaboration, reflected, for example, in NEPAD's proposals for the development of industry-based indicators for research output (NEPAD 2005). In South Africa, the African country with probably the most elaborated higher-education policy framework, while there is a good deal of discussion in the policy documents of new modes of knowledge production, when it comes to knowledge dissemination, this is described either as project-based knowledge transfer through industry/university collaboration in particular projects, or in terms of easily-measured outcomes in the form of a mechanical count of journal articles published in accredited journals. The other reason for the failure of research dissemination in Africa to deliver national development goals is that research publication policy seems to be formulated according to completely different paradigm, a publish-or-perish philosophy based on the recognition of individual effort in a collegial environment, rather than a community-focused and outward-looking development ethos.

There has been little analysis or discussion of the lack of viability of current modes of research publication, of how publication could most effectively support the development goals articulated in research and innovation policy, or of how research publication could be structured and supported

2 The best overview of this debate is Peter Suber's Open Access Newsletter: <http://earlham.edu/~peters/fos/fosblog.html>.

3 There is a useful checklist of such policy initiatives on the Science Commons website: <http://wiki.iccommons.org/index.php/policies>

(with the exception of the South African Academy of Science Report discussed later in this paper). What discussion there has been has tended to focus on how to make the existing system work, rather than critically interrogating the effectiveness or appropriateness of the current environment. This absence might be, at least in part, a reaction to the overwhelming problems of the digital and knowledge divide and a despairing sense that African scholarly communication has to remain in the old world, but this is not a sufficient explanation. It is clear that African scholars do need to grapple with the failure of existing systems and the potential of new dissemination technologies and strategies if they are, as NEPAD asks, to be able to position themselves in the changing trajectories of 21st century communications.

This paper has been produced in the preliminary stages of a research project being undertaken in the Open Information Working Group of the International Policy Fellowship programme of the Open Society Institute, Budapest. The goal of the Information Working Group programme is articulated as follows:

Advanced by the Internet, alternatives to long-standing intellectual property regimes have created an environment to reassess the relationship between democracy, open society and new information technologies. The promise of Open Source technology with respect to civil society and the incalculable leaps in information production by means of open content and web logs present a new platform for civic participation. Whether and in what form such promises can be realised lies at the basis of the questions addressed in the projects⁴.

My own project reviews the potential for Open Access publishing policies and strategies to help reverse the marginalization of African research publication in the global community. In particular, the project examines sustainability models and quality frameworks for the use of digital research dissemination, in order to try to find a way around the problems that African scholarly publication faces. The project will provide an overview of South African policy-making as it relates to research dissemination and publication, linking this to the broader context of African policy and publishing practice and then contextualising both in international developments and debates around research dissemination in the networked society. South Africa, with its relative advantage of a stronger infrastructure and a more highly-developed policy environment, could provide a testing ground for potential successes and failures in research dissemination policy in a wider African setting.

If one looks at the global context in which this research project is taking place, it is clear that traditionally accepted systems for the dissemination of research knowledge are being vigorously

4 Details of the IPF programmes can be found at <http://www.policy.hu>

challenged, largely – but not only – as a result of the technological revolution wrought by the advent of the Internet and the growth of a knowledge economy in a globalised networked society. In this environment, Africa risks being further marginalised, as 'technological capacity, technological infrastructure, access to knowledge, and highly skilled human resources become critical sources of competitiveness in the new international division of labour.' (Castells 2000:109). All these are problematically lacking in Africa.

As Yochai Benkler puts it at the start of his seminal new book, *The Wealth of Networks*:

The change wrought by 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).

New technologies are thus affecting not only knowledge dissemination strategies but the very basis of our commonly-accepted paradigms of social and economic systems and behaviour. This could provide challenges for African development policies, but also real opportunities to break the cycle of dependency and dysfunction, using such collaborative and non-proprietary approaches as Benkler describes.

Right now, however, such thinking is very far indeed from the discourse that predominates in most African research publication policy, which, relying on a 'publish-or-perish' philosophy that is under serious challenge in the rest of the world, effectively serves to marginalise African research even further. Rather than being forward-thinking, approaches to research publication seem to be trapped in received, outdated paradigms. In fact, the current system of scholarly publication seems to be treated by the policy-makers (and indeed by many academics) as an unchallenged 'given' a kind of public good that does not need examination or interrogation. It seems to be one of those areas of discourse that does not open itself to discussion and debate, but rather evokes stock responses. And so journals are good, more journal articles are better, foreign is better than local, current methods of peer review are an unchallengeable good, international journal rankings and citation indexes are the best measure of quality.....

The authors of the CopySouth Report on copyright in the developing world observe a similar

mechanism when it comes to the related field of intellectual property:

More than 70 years ago, the American legal scholar, Felix Cohen pointed out how certain legal words and concepts had clouded our thinking about the reasons why we have particular laws and what the social purposes are supposed to be. Such words as 'properly rights' and 'fair value' had become what Cohen called magic 'solving words' which, when used to try to resolve social issues, often simply became 'transcendental nonsense' (CopySouth 2006:149).

I will argue that for different reasons, but in a similar fashion, as a result of a set of historical developments, a similar blindness has developed in relation to the discourse of scholarly publishing and that this has impacted on the policy environment, creating a situation in which research publication policy and practice fail to coordinate with the dominant paradigms of research and innovation policy.

In response to the Brazilian challenge to link the traditional and the new, with which this paper opened, as an illustration of the ways in which received patterns of thinking can distort outcomes. and to demonstrate how older traditions might inform new thinking, I would like to circle back to early colonial history in my part of the world - the Eastern Cape in South Africa - and link this to new conceptions of the 21st century networked society. This story contains a salutary lesson concerning policy formation relying on too-readily-accepted epistemologies. This example teaches that perhaps, after all, a the 21st century networked world has something to learn from precolonial 18th century southern African communities and conversely, that what the networked society offers is congenial to African traditions.

In a 2002 article in the *Journal of Social History*, Clifton Crais describes the bafflement of early colonists faced with the social structures of the indigenous peoples they encountered as they moved eastwards:

Political power tended to be localized, boundaries fluid and vague, and the authority of chiefs highly variable. The political landscape was both homogeneous and kaleidoscopic, with widely dispersed material and symbolic resources and constantly changing political domains. Even at moments of relative stasis domains of authority very frequently overlapped. Political identities were multiple, with the fluidity of identities generally increasing with geographical distance from any given center of power.

....The absence of any unequal distribution of economic goods, trade, or population mitigated against the centralization of power. Second, military technology and strategy were widely democratic. Third, there were multiple nodes and overlapping domains of authority

(Crais 2002).

What Crais describes could have a number of intriguing parallels with the battle that some have in understanding the workings of networked society in global Internet culture. The colonists could only interpret what they encountered in the context of their own epistemology – in this case, the language of nation states and political sovereignty. The history of colonial conquest in this region is a familiar one of political and social structures being radically altered or destroyed by colonists whose frame of reference could not extend to understanding social structures so different from their own (Crais 1992, Mamdani 1996). What happened then was that the transformed structures negotiated in the colonial period were soon transmuted into an altered version of the 'traditional' that then became accepted as historically-founded social reality. For example, in post-apartheid South African policy-making, the government has settled for a rural dispensation that recognizes the invented colonial paradigm of authoritarian 'traditional leaders'. In so doing,' writes Crais, ' it is foreclosing other ways of thinking about history, politics and citizenship in a post-apartheid South Africa' (Crais 2002).

There are lessons for us in this excursion into African history. First, if we approach the radical changes taking place in 21st-century communications with minds closed to all but the old, reigning paradigms in global research dissemination, I will argue that we might risk entrenching even further the structures that currently marginalize African scholarship so effectively. Secondly, we would pass by a notable opportunity to recognize that in the ferment of discussion and debate about how Internet scholarship could work, a number of the more radical approaches, based as they are on non-proprietary models of production, mutual sharing and a knowledge commons rather than on individual ownership (Lessig 2002, Lessig 2004, Willinsky 2006; Benkler 2006), in fact echo values and systems that are more familiar to African cultural traditions than the Western norms are. Potentially they may well prove more empowering for the development of a stronger voice for African scholarship .

The real need, then, is for policies and strategies that would grow the output and effective dissemination of Africa-based research in and from Africa, for African development, in the most appropriate media and formats. The reality is very different, as can be tracked in the development of South African post-apartheid research policy.

After the collapse of apartheid, South Africa became something of a policy factory as it has confronted the transformation challenges of reversing the apartheid legacy. Although its policy initiatives are on a larger scale than those of many other African countries, there are a number of

similarities and common threads, in spite of a lesser reliance in South Africa on donor-funded policy-making or on policy initiatives driven by international agencies. Nevertheless, South African policy development for the higher education system post-1990 does provide a very useful framework around which to discuss higher education challenges across the continent. In some cases, South Africa articulates in formal national policy documents what is implicit or informal in other countries and thus provides a useful testing ground for the effectiveness and appropriateness of higher education policy in an African context.

Teboho Moja (2006) traces two distinct phases in higher educational policy development throughout Africa in the 20th century. The first wave followed independence in the 1960s and 70s and focused largely on mechanisms for the expansion of higher education. The second phase, which concerns us here, came in the wake of the collapse of apartheid, the establishment of the African Union and NEPAD. Influenced by globalisation concerns, these policy initiatives, as far as they apply to research development, are aimed at ensuring that the higher education system falls in behind national initiatives for human resource development and national economic growth.

Higher Education policy in South Africa, as it has developed in the years of political transition, follows this pattern and shows a strong commitment to development goals, economic growth and poverty reduction (Bawa and Mouton 2002, Hall 2006). It is built predominantly around a discourse of national innovation and tends to favour science and technology research, although statements are made about the importance of the the social sciences. There are robust attempts to coordinate policy across the different government departments and institutions involved and these coordinating factors are generally also framed by a desire to deliver national development and economic growth.

It is when it comes to research dissemination policy, however, that the developmental discourse seems to fall apart. What seems to happen is that, although the development rhetoric is still there, at least in introductory comments in research publication policy documents, the provisions for the promotion, measurement and rewarding of dissemination and publication revert to a much more conservative paradigm (and an earlier policy phase) than the founding principles of the framing policy would seem to demand.

A closer examination of the policy documents makes the clashes in policy discourse even clearer. The South African research policy process started with a report on Science and Technology Policy in South Africa commissioned by the new government from the IDRC (Van Ameringen 1995). In its recommendations, it set the pattern for the development of further policy interventions, by stressing

the need for research policy to align with 'the real development needs of the majority' in a coordinated way. It emphasised the need to realign policy to foster the recognition that South Africa is an African country 'and that it has experiences and knowledge to share, but that it also has much to learn from other societies.' The recommendations from this report stress the need for coordination of higher education policy and articulation with the needs of the country - and particularly the need for consultation and communication with disadvantaged communities.

An interesting sideline in the IDRC report is its findings on the HSRC, which it described, at the time when the report was written as 'one of the most controversial research institutions in South Africa', an organisation 'irretrievably tainted by its contribution to much of the analysis behind "grand apartheid"' (Van Ameringen 1995). The HSRC was still regarded with suspicion, the report reveals, and was perceived as the organisation with the greatest need to demonstrate its appropriateness in the new higher education system.

At a crucial stage of a comprehensive transformation process undertaken about five years later under the leadership of CEO Mark Orkin, a strategic decision was taken to build a carefully-targeted publication programme designed to provide effective dissemination of HSRC research, in line with the organisation's mission to provide 'research that makes a difference'. The new publication strategy provided for online Open Access publications in parallel with high quality print versions offered for sale at subsidised prices. A professional publishing department was built up and publications were designed to meet the needs of the different audiences of HSRC research, from politicians, policy-makers and academics to general readers. Outputs included research reports, monographs, collections of articles, discussion documents, and popularisations.

These publications were aggressively marketed to profile the achievements of the new research programmes of the HSRC and were often published in real time in order to ensure immediate impact for research findings. This combination of digital dissemination, new commercial models and forward-thinking market strategies proved remarkably effective, making the HSRC Press's open-access website a first stop for politicians, policy-makers and academics worldwide and helping to ensure the impact of its development-targeted research programmes.

Given the role that this innovative and effectively-managed publication programme played in the subsequent transformation and re-positioning of the HSRC, it would be interesting to see further research on the contribution and impact of effective publication in the mix of strategies

used to deliver development goals, earn the trust of government and policy-makers and recreate the organisation as one with a respected and valuable role to play in a democratic South Africa.

Once the initial policy recommendations were taken up for implementation by the South African government, higher education policy developed in two broad channels, one driven by the Department of Arts and Culture, Science and Technology (DACST) and the Department of Trade and Industry (DTI), the other by the Department of Education (DoE) (Bawa and Mouton 2002). New structures were developed for research policy implementation, of which the most important for the purposes of this discussion is the National Research Foundation, mandated to gear research funding to the developmental policy drivers agreed upon. When this was translated into policy proposals by DACST, there was little on dissemination of research outputs, but what there was is telling for two reasons: one, that the importance of social science knowledge dissemination for informed policy development was emphasised; the second, that the document argued for public domain access to social science knowledge:

Social science research has a significant role to play, both in formulating options for public policy and providing informed critiques of such policies; the outputs of both activities *must be in the public domain, to inform political debate* (DACST 2002 – my emphasis).

Unfortunately, little of this was delivered in the final policy formulations.

Policy initiatives driven by DACST (later to become DST in the wake of the separation of the Arts and Culture and Science and Technology portfolios) as spelled out in the framing document, *South Africa's National R&D Strategy* (2002), thus shift from the previous government's focus on military research and energy self-sufficiency to the discourse of globalisation and the need to promote economic and social development, human resource development and poverty reduction. As far as intellectual property is concerned, the strategy document articulates the need to address the challenges posed by new technologies, and the question of biotechnology and indigenous knowledge. 'International thinking on legislation is as fluid and fast-moving as the new technologies themselves', the report comments. 'We need to develop competencies as a matter of urgency or face exploitation and marginalisation with respect to our own resources. A clear approach to intellectual property that arises from publicly funded research is required' (DACST 2002:22). However, the subsequent discussion of IP issues veers between recognition of the need for access (somewhat understated) and the 'appreciation of the value of intellectual property as an instrument of wealth creation in South Africa' (68). Emphasis is placed on the potential for the development of

education through the use of the Internet for content delivery (43). These contradictions are not resolved in the strategy document and indeed legislative reform and policy formation concerning copyright have been in suspension in South Africa for some time.

The report identifies the problem of the dominance of an ageing cohort of white male researchers over publication output and implicitly, therefore, recognises the problematic inherent in the conservative drivers of the current scholarly publishing dispensation. However, when it comes to proposals for the delivery of the Innovation Strategy, publication and research dissemination simply does not figure. The NRF's business plan for the implementation of the Research and Innovation Strategy sets targets for the number of publications to be produced, but does not go any further than that.

It has been left to the Department of Education, then – at least thus far - to articulate policy on research publication. The DoE focused on the creation of an overarching policy initiative for higher education reform in South Africa : the formation of the National Commission on Higher Education (NCHE) in 1994, which framed the discussion that ultimately led to the White Paper on Higher Education (1997) and the National Plan on Higher Education (NPHE) (2001) The policy-making process was characterised by wide-ranging discussion and debate, with an emphasis on consultation and transparency. Here, again, the framing discourse was developmental and the key issues were equity, diversity, redress and the creation of research strength.

Preliminary remarks in the NPHE on research and research dissemination sound encouraging: a strategic objective is 'to promote the kinds of research and other knowledge outputs required to meet national development needs and which will enable the country to become competitive in a new global context' (NPHE:60). The document complains of a lack of coherent policy on research outputs, promising policy development to address this issue. It raises the need to respond to the global transformation of knowledge dissemination through ICTs and talks of the need to build networks to fuel the growth of an innovation culture (NPHE:61). The problems identified are those of declining research publication output and the dominance of ageing white researchers as authors of publications. Lastly, an interesting detail: the report comments on concerns raised about the lack of attention to certain types of publication, such as technical reports and policy reports.

If I were to hypothesise the outcome of these recommendations, as a publisher, I would look for a research dissemination policy that addressed the real needs of a country in a state of radical transformation, that incorporated the potential offered by new methods of knowledge dissemination, that reflected the approaches spelled out in the Innovation Strategy and the NPHE,

and that made provision for a range of publishing outputs to meet the needs of different audiences and constituencies. I would look for a focus on national, rather than international, dissemination in the first instance. I would also look for funding mechanisms to support knowledge dissemination and policies for public access. Instead, when the Department of Education delivered the promised policy on research dissemination in 2003, it only paid lip service, in its preliminary comments, to the need articulated in the NPHE 'to sustain current research strengths and to promote research and other outputs required to meet national development needs'. The policy document then went on to spell out a 'publish or perish' reward system that recognises and rewards peer reviewed publication in journals appearing in the ISI and IBSS indexes and a somewhat problematic list of locally-indexed journals, in part inherited from the apartheid era (ASSAf 2006). Although peer reviewed books and conference proceedings accepted by an evaluation panel are also rewarded, they have a lesser weighting in terms of financial rewards.

The wording of the policy insists on 'originality', rather than tackling the implications of the collaborative research approaches recommended in the broader policy framework. It insists on editorial boards and peer reviewing as quality control mechanisms and the target audience of these publications is identified as 'other specialist's in the field'. The way it functions rewards individual rather than collaborative effort. Although the document sets out by taking into consideration 'the changing modes of disseminating research and output, such as electronic publication', the details of its provisions are clearly geared primarily to print publications. In other words, the policies framing rewards for research publication remain firmly in a collegial tradition in which the purpose of scholarly communication is turned inwards and is related to personal advancement in the academic system, rather than grappling with what it might mean to gear research dissemination towards broader social goals.

There are very welcome signs that further attention will be paid to research publishing policy and practice in South Africa. The recently-published *Report on a Strategic Approach to Research Publishing in South Africa*, produced by the Academy of Science and commissioned by the Department of Science and Technology (ASSAf 2006), is a particularly welcome indication that there is a commitment to dealing with the question of research dissemination. The main recommendations of this report are that funds should be allocated from the grants made by the Department of Education for research publication to support scholarly publishing in South Africa; that the Academy should function as a supporting and quality control body for scholarly publishing; and that Open Access initiatives, including the development of research repositories, should be undertaken, supported by the government.

That said, the recommendations of the report remain within the boundaries of the existing research reward system and appear to accept as a given the current framework of recognised scholarly journals and citation indices and conformity to international impact measurements. Acknowledging the pressures of a wide variety of existing stakeholders, this report aims to improve the status quo, rather than contemplating a more radical view of what a policy initiative would look like if it planned for 2016 rather than 2006. What the report does achieve is to broker the recognition that research dissemination is strategically important, needs government recognition and support and needs to be built up as a national asset. Taken together with its very sound Open Access recommendations, that might position this initiative as a necessary staging post towards a more radical and forward-thinking policy initiative, one that would could well be continent-wide consequences, through the network of African Academies of Science.

When one turns to higher education policy initiatives across sub-Saharan Africa, the pattern is very similar, although South Africa has a more elaborated policy infrastructure than most African countries, where a formal national policy for publication is a luxury that is not contemplated in severely under-resourced systems. Instead, scholarly publication tends to be treated at institutional level, or informally. A common pattern shared with South Africa is for university presses and journals to be required by their universities to become 'viable' or to 'break even', a very unrealistic expectation in the circumstances. The pattern in Nigeria (Adebowale 2003, Olukoju 2004) and familiar in a number of other countries is that a range of survival strategies have been developed: the amalgamation of university presses and printing operations; diversification into products perceived to be more viable, such as textbooks; self-publishing initiatives; and the proliferation of journals in university departments, often very ephemeral, supported by a precarious mix of subscription income, subsidy and voluntary work. 'Print-based journals remain the most prominent avenue of scientific communication in Africa, despite the declining capacity of African universities to subscribe to them,' according to Teferra (2004).

These problems are not particular to Africa, although African universities face more serious difficulties than their counterparts in the global North. The truth is that conventional scholarly publishing is not working well in the developed world, either. Declining capacity to subscribe to journals is not a feature of Africa alone. The current scholarly publishing models around which the universities internationally - and African universities are no exception - have largely built their tenure and promotion systems would probably have come under fire even if it were not for the alternatives offered by new technologies. The price of journals has sky-rocketed in the last decade at the same time as library budgets have been put under pressure. Because the major journals are now dominated by huge commercial conglomerates, universities find themselves held hostage to

pricing systems that do not obey the laws of supply and demand and over which academic libraries have little control (Benkler 2006: 323-4; Wellcome Trust 2004; Willinsky 2006:20-21). Although the system often seems to be regarded by academics as 'traditional' and immutable, this commercialisation is in fact of very recent date – it grew in the 1970s and 80s in the wake of massification of higher education in the 60s and 70s, the application of 'Bradford's law' and the adoption of the 'core journal' philosophy that lay behind the creation of the hugely influential ISI Science Citation Index (Guedon 2001, ASSAF 2006). The 'journals crisis' that has resulted from the resulting vicious circle of rising subscription prices, market manipulation through 'bundling' of journal packages, and falling library budgets has stimulated much of the global discussion and developments around new models for online scholarly publication.

The journals crisis is felt very acutely in Africa, where the effects of high prices are even more devastating, given weak currencies and a lack of resources (Willinsky: 99-100). Yochai Benkler argues that the incentives provided by the intellectual property system results in higher prices for products developed only for users in the rich countries of the world, which is where the major markets are.

Under these conditions, the above-marginal-cost prices paid in these poorer countries are purely regressive redistribution. The information, knowledge, and information-embedded goods paid for would have been developed in expectation of rich world rents alone. The prospects of rents from poorer countries do not affect their development. They do not affect either the rate or the direction of research and development. They simply place some of the rents that pay for technology development in the rich countries on consumers in poor and middle-income countries. The morality of this redistribution from the world's poor to the world's rich has never been confronted or defended in the European or American public spheres. It simply goes unnoticed (Benkler: 318).

The criteria that apply to the selection of journals to the ISI indexes by their very nature serve to marginalise scholarly output from outside the major knowledge producers in North America and Europe, thus serving to reinforce the global knowledge divide. As Guedon (2001) makes clear, the system functions to create a kind of club and to create brands that then reinforce both prestige and profits. And, as clubs tend to do, the system excludes through its selection processes and value criteria. Paul Zeleza has demonstrated, to devastating effect (1997), how the system is biased against women, racial minorities and scholars from outside of the metropolitan centres and is built around Western realities, paradigms and values. The prevailing publishing system distorts research agendas, drawing researchers to projects that would attract publication in the North rather than those of local concern. A dispassionate evaluation would hardly identify this as the

knowledge dissemination mechanism most suited to leveraging research information for maximal impact on social and economic goals on a continent facing massive development challenges.

Publishing by numbers is also coming under increasing attack. There has been an absurd growth in the number of scholarly books and journals published in the US – the total output of all university presses in 2000 was 31 million books, reports Lindsay Waters, Humanities Editor of Harvard University Press, questioning both the quality of this level of output and the actual readership of these books. (Waters 2004:7). 'The problem', he writes, 'is the concentration on productivity without concern for reception.' (18) Zeleza concurs, from an African perspective: 'The intense pressure to publish', he argues, 'resulted in a perverse inflation of publication, in which dissertations were cannibalized and quantity mattered more than quality, and mountains of papers were churned out to be listed and indexed rather than read' (Zeleza 1997:45). Waters agrees with Zeleza on this: 'Books - at least those that are actually published – have become in the system merely icons to be counted or worshiped, but not looked into. We have the sales figures and they are appalling', he writes (Waters 2004:29). The business and market parameters simply do not make sense – dramatic increases in publication output accompany a fall in purchasing power in the market, leading to smaller print runs and a spiralling decline in profitability for university presses. In the face of evidence that the traditional model of scholarly publication is not viable even in the richest book market in the world, one might question why there a presumption that it might work in Africa, where readership is low, distribution costs are high and international markets very difficult to access.

In spite of these failures – and criticisms – the conventional scholarly publication system still prevails. Given that academic promotion, and hence personal ambition, are intimately tied into this system, it is difficult to challenge without raising the ire of academics and changes are coming slowly, even more slowly in Africa than elsewhere. There are a number of often-unquestioned assumptions in this traditional model that need to be resisted if effective research dissemination is really to have an impact on African development. These are that research dissemination is not the business of universities and should therefore be outsourced to commercial providers; that scholarly publishing is a profit-based business; and therefore universities do not need to fund it. In fact, if research is to have an impact on development goals, then African governments and universities will need to accept that effective dissemination of research findings is a necessary investment. Without effective dissemination, research is locked up and much investment wasted. And, with the exception of the biggest multinational journal publishers, scholarly publishing is at best a marginal business even in the much larger markets in the global North. It is not a place where profits can be expected. As Lindsay Waters argues:

There has emerged the unreasonable idea among administrators and some academic publishers themselves, who seem to feel compelled to comply with unreasonable expectations, that university presses should be turned into “profit centers” and contribute to the general budget of the university... [T]he idea of milking the university presses – the poorest of all publishers – for cash is the equivalent of making the church mice contribute to the upkeep of the church (Waters 2004:5).

It is against this background that the use of new technologies and new approaches for research dissemination come into their own, even for - or perhaps especially for - Africa. The paradox is that, because Africa is not heavily invested in the traditional publishing models and because scholarly publication is so dysfunctional in Africa, it might have a better chance of embracing new models and 21st century solutions.

What, then, are the new developments in scholarly publishing in a networked world? It was natural for universities to be early innovators in electronic publishing, given the pivotal role played by American universities in particular in the early development of the Internet, alongside the US military. As a result, the higher education sector is 'wired', even in parts of the world with very low levels of technology penetration and is further down the road in the development of electronic dissemination than most other sectors. It was rapidly discovered, from the mid-1990s onwards, that online publishing had distinct advantages over print in the small-volume and widely-spread markets that characterise the research sector. In fact, electronic dissemination of research output can impact most effectively in precisely those areas in which African publishing suffers most:

- It reduces the marginal cost of publishing (i.e. the cost of making more copies), offering more flexibility and scalability;
- Distribution costs are near-zero once the infrastructure is in place (although that infrastructure is a major issue in Africa);
- There is much greater reach – the geographical and market obstructions which inhibit print distribution (a particularity acute problem in Africa) fall away;
- Peer to peer networks allow for collaborative and interactive research development with the potential for increased research effectiveness, particularly where resources are at a premium, such as in the developing world⁵

Given the democratic potential of the new medium for the wider spread of research knowledge and given freedom from the inhibiting factor of high print costs, it is not surprising that there has been a

5 Benkler offers a striking and detailed account of the effectiveness of such collaborative research methods in the developing world, as compared with traditional IP-driven approaches (2006:328-355).

very rapid increase in electronic journal publication. 'To have perhaps 20,000 journals or more move to online editions in less than the last dozen years suggests that this is where journal publishing is headed,' writes John Willinsky (2006:14). There are now predictions that scholarly journals are likely to move fully online within a decade, abandoning their print versions, something that will have to be grappled with in African technology policy if Africa is to be a player in the networked global knowledge economy.

Electronic publication, with its zero-cost dissemination, challenges commercial distribution models, based as they are on the high cost and costly dissemination of print products. In opposition to the excessive commercialization of the journal business and an increasingly oppressive IP regime, particularly in the US, the Open Access movement has turned attention to the question of access to research knowledge, where 'publish-or-perish' policies emphasise its production. There is growing acceptance, in a number of international declarations⁶, for the idea of public access to publicly funded research. The Budapest Initiative puts it cogently:

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, 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. Removing access barriers to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge⁷.

More than 30 nations have signed the OECD Declaration on Access to Research Data from Public Funding⁸ (to which South Africa is a signatory) and an increasing number of governments, public institutions and donors have developed policies that advocate public access to the research that they support and fund. The European Union in a recent report 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

⁶ A summary of, and access to the text of, these initiatives is provided on the website of the iCommons Rio Framework for Open Science, http://wiki.iccommons.org/index.php/The_Rio_Framework_for_Open_Science. The most comprehensive discussion of the Open Access movement, including the various declarations and initiatives and the history of the commitment of governments and institutions to the principle of Open Access is on Peter Suber's Open Access Newsletter website: <http://www.earlham.edu/~peters/fos/overview.htm>

⁷ <http://www.soros.org/openaccess/read.shtml>

⁸ <http://www.oecd.org>

publication, promoting electronic publication and finding support for publications that might not be viable (EU 2006: 88-9). The National Institute of Health in the USA requests Open Access archiving of the research it supports; the UK Research Councils ask that funded researchers deposit a copy of their research in an archive and, most startlingly, the Bill Gates Foundation has recently declared that it will only fund Open Access AIDS vaccine research in Africa. The Wellcome Trust expresses the values that underpin these initiatives thus:

Public and merit goods are those which the public values but which the markets find it difficult to allocate because individuals cannot, or should not, be excluded from their consumption. Scientific research falls into this category and society as a whole is worse off if access to scientific results is restricted. .. The benefits of research are derived principally from access to research results. To the extent that the dissemination of research results is less than might be from given resources, we can argue that the welfare of society is sub-optimal (Wellcome Trust 2005).

Internet publishing, supported by the push towards access to research information, also offers new business models as a way out of the growing 'journals crisis'. The Open Access model addresses some of the illogicalities of conventional scholarly publishing. In the 'subscriber pays' journal publishing model, for example, the universities contribute the research, the authors and peer reviewers. Moreover, authors often pay 'page charges' or other subsidies and, finally, relinquish copyright to their work. University libraries then buy back the journals, paying subscriptions that have shown inflation at well over the cost of living in the last decade. In the Open Access model, costs are borne at the initial stage, articles are published online and made available free of charge.

Alongside the 'gold route' of Open Access journal publication, the 'green route' of open archives and repositories offers the potential for global access to a much wider range of research outputs, from data sets to research findings. The advantages that these repositories offer African universities are striking, starved as these universities are of access to international research findings.

It has been in access to resources, rather than in the production of 'gold route' African Open Access publications that most progress has been made to date. Projects such as the WHO's HINARI partnership with a 47 health journals and the AGORA project for access to 500 food and agriculture journals, together with the growing number of Open Access publications provided by organizations such as the Public Library of Science, Biomed Central and Hinari and projects such as INASP's PERI initiative offer a lifeline to beleaguered African university libraries and scholars (Willinsky 2006:99-100; Chan and Costa 2005: 143-6; Kirsop and Chan 2005: 247-9).

Partnerships such as that being celebrated at this conference, between the ASC and CODESRIA provide valuable outlets for the expansion of access to African-generated knowledge. Add to this a

number of local and regional ICT initiatives and there is room, as Teferra points out, for cautious optimism. However, as he stresses – and I concur heartily:

Even today, as much as ICT dramatically enhances communication and hence contributes significantly to knowledge generation, a multitude of hurdles and complex external and internal problems need to be addressed to ensure sustainable growth and development of knowledge creation, access, and dissemination capacity in the continent (2004:399).

However, if African knowledge from African scholars and universities is to have a real impact, then there needs to be further development of Open Access journals and repositories – Open Access because this is the most effective way for African publishers to leapfrog the major barriers that currently exist between them and global audiences. Up until now, such progress has been slow.

A recent INASP survey of Open Access journals in Africa reveals that there has been little debate in Africa about Open Access or other access models, although it emerged that print-based journals were not achieving exposure through internationally searchable indexing services. Of the 230 journals sent questionnaires by INASP, only 48 survey returns were received. Respondents agreed that Open Access would improve the exposure of their journals 'and probably raise the quality of published work on the continent'. The major uncertainty was about sustainability and infrastructure. The report concludes that:

African journals are running late in catching the electronic OA boat, but many are beginning to realise that the subscriber-pays-for-printed-copy is not the only way to publish. Clearly, the editors desire the worldwide visibility that online availability (and Open Access) can offer their journals, but the survey showed an incomplete understanding of the OA model and fears about its sustainability (Ouya 2006).

It might be argued that electronic research publication is a luxury that Africa cannot afford, lacking as it does a developed technology infrastructure. Yochai Benkler is worth quoting at length on this issue:

How will the emergence of a substantial sector on non-market, commons-based production in the information economy affect questions of distribution and human well-being? The pessimistic answer is, very little. Hunger, disease and deeply rooted racial, ethnic, or class stratification will not be solved by a more decentralized, non-proprietary information production system. ... There is enough truth in this pessimistic answer to require us to tread lightly in embracing the belief that the shift to a networked information economy can indeed have meaningful effects in the domain of justice and human development.

Despite the caution required in overstating the role that the networked information economy can play in solving issues of justice, it is important to recognize that information, knowledge

and culture are core inputs in human welfare. ... The networked information economy.. equalizes, to some extent, both the opportunities to participate as an economic actor and the practical capacity to partake of the fruits of the increasingly information-based global economy (Benkler 2006:301-2).

Although the question of the sustainability of Open Access publications is an important issue for African universities, and the sticking point for academics, administrators and publishers when Open Access is raised, two things need to be borne in mind. One is that the current system of scholarly publishing in Africa is, in reality, neither functional nor sustainable. The other is that, as Suber (2006) argues, the true costs of authoring, peer review, manuscript preparation and dissemination are lower than the prices currently being paid for subscription journals. More important, Open Access offers African scholarship unprecedented opportunities to reach previously inaccessible audiences, nationally, regionally and internationally.⁹ Impact factors are also much higher for open access electronic publications, particularly in the short term after publication of an article and particularly for publications from developing countries.¹⁰ As Barbara Kirsop and Leslie Chan point out, for both developing country governments and donor agencies, the present system is wasteful, leading to unsustainable and short-lived journals with very limited audiences. Rather, they argue, 'use the same funds to bring the journal to a global audience through OA, thereby enlarging the readership base and potential contributors.' (2005: 157)

If one were to conceptualise a forward-looking research dissemination policy for Africa against this background, one that accepted the challenge of discerning future trajectories and one which avoided becoming trapped in historically distorted frames of reference, it would need to be able to engage with some radical challenges to the enshrined conventions of scholarly publishing. A truly African-focused scholarly publishing programme, for example, should not necessarily follow the international dominance of scholarly journals, but should publish according to the needs of target audiences, whether that be articles, research reports, data sets, and monographs, as well as publications targeted at non-scholarly audiences, such as manuals and handbooks.

Moreover, if African scholarly publishers are really to make the leap from the 19th to the 21st century, according to the Brazilian challenge cited at the outset of this paper, then there are a number of new trends that might need to be taken into account. These include the fact that research is becoming collaborative rather than individual. Already, on an informal level, younger

⁹ A cogent account of Open Access and global e-research trends as they apply to South Africa is provided in the final chapter of the ASSAf Report on a Strategic Approach to Research Publishing in South Africa, pp. 107-122.

¹⁰ For an overview of the discussion of OA impact factors see <http://opcit.eprints.org/oacitation-biblio.html>

scientists are using blogs and wikis for collaborative research development rather than the more competitive mode of research production that older researchers are used to. At a more formal level, inter-institutional peer-to-peer development adds capacity by extending projects laterally over a number of participants, organised in a democratic, voluntary network. This could be a powerful model for African scholarship, where such collaborative models could add substantial capacity in a resource-challenged context (Benkler 2006: 328-355). In this model, a published article might be seen as work in progress - the basis for further collaborative development - rather than as an immutable and finished piece of work. This is already happening in PLOS ONE, the new and experimental Web 2.0 journal from the Public Library of Science. Peer review might become collaborative and open, laterally networked rather than hierarchical.

Policy formulation would thus need to grapple with issues of access and development impact, rather than just the question of academic prestige. Publication policy cannot privilege international publication over local but needs to focus primarily on the production of high-quality and relevant research to meet African development needs and only in second place deal with the need for international prestige. The use of a combination of Open Access publication in Africa and the development of Open Access repositories for work published internationally by African researchers could provide the best of both worlds: local impact plus international dissemination and prestige. Given the urgency of these needs in Africa, public access to research knowledge should be an important policy issue, alongside the growth of development-sensitive dissemination strategies. Policy would need to address access to knowledge from publicly funded research; support for research archiving and repositories; the recognition of a wider range of publications; and better support for and recognition of local publication.

Most important, though, the topic of publishing and dissemination needs to be given a much higher profile and be subjected to more rigorous critique, so that awareness of the issues is increased. It has to be accepted that research dissemination is of vital importance and needs support if investment in developmental R&D and Innovation policies is to maximise its effectiveness. Only in this way would publication and research dissemination policy be brought into in line with the developmental principles that underpin the main thrust of research policy in Africa. However challenging the issues may be, it seems that the question of electronic knowledge dissemination and publication in Africa has to be put more firmly onto the policy agenda and needs better integration into the wider policy environment, in order to advance the potential for effective research impact on the development challenges that the continent faces. Perhaps we can 'connect the differences' and take African scholarly publishing forward successfully into the 21st century.

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