



PROJECT MUSE®

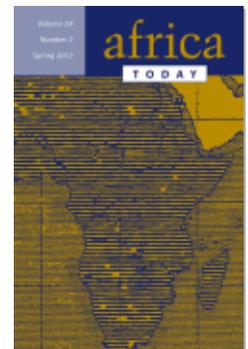
The Digitization of Africa

Peter Limb

Africa Today, Volume 52, Number 2, Winter 2005, pp. 3-19 (Article)

Published by Indiana University Press

DOI: [10.1353/at.2006.0010](https://doi.org/10.1353/at.2006.0010)



➔ For additional information about this article

<http://muse.jhu.edu/journals/at/summary/v052/52.2limb.html>

The Digitization of Africa

Peter Limb

Globalization and technological change are driving new developments in electronic publishing and learning—developments that are dominating the transmission of educational information. African studies in the North are harnessing these developments to enhance the study of Africa. While control of, and profits from, these trends largely bypass Africa, there is growing evidence of successful African digital ventures. A new “scramble for Africa,” for information resources to digitize, suggests a new process is unfolding: the digitization of Africa. This article outlines these trends and discusses priorities and principles underpinning evolving partnerships. The challenge for all involved in the digitization of African resources is to ensure access, sustainability, and fairness in the sharing of these resources. These goals can be furthered by close cooperation with and listening to African partners, and by the design and implementation of models that effectively deliver information resources over the long term in mutually beneficial ways.

Globalization and technological change are driving new developments in electronic publishing and learning—developments that are increasingly dominating global educational and scientific trends. While control of, and profits from, these trends largely bypass Africa, there is growing evidence in some African countries of successful ventures to develop digital resources. Simultaneously, African studies in the North is harnessing these trends to enhance the study of Africa. In both Africa and the North, there is therefore a new “scramble for Africa,” for information resources to digitize—either for open access, or for profit—such that one can talk of a process of the digitization¹ of Africa. This article outlines these trends and discusses priorities and principles underlining evolving partnerships in this field. I treat the complexity of the processes of creating, accessing, and using digital resources, both full-text and metadata, and I do this in respect of resources in and about Africa, and their interactions. Open access, I argue, must be the priority for countries unable to afford high prices of commercial information while partners in the North must strike a balance between open access and user-pays models.

In the field of African studies in general and more gradually in Africa itself, substantial progress is being made by universities, governments, and publishers in providing digital access to scholarly resources. New strategies for digital publishing, preservation, and access are evolving among Africans and Africanists, but face daunting problems, most notably in Africa.

In Africa, limited resources predicated on deep economic difficulties continue to adversely affect education, publishing, libraries, and the reach of new technology (Dick 2002). Hence, nothing comparable to the extensive schemes of digitization of scholarly resources in the North, as seen, for instance, in the steady digitization of U.S. and U.K. state archives or the JSTOR project with journal back issues, has yet materialized in Africa. Despite progress in African internet connectivity, vast inequalities persist, with the growth of international and class digital divides adding to longstanding problems of production and the unequal distribution of information seen in book and journal “famines” (Sturges and Neill 1998), corporate exploitation of indigenous knowledge (Snyman 2002), and neglect of indigenous language publishing (Altbach and Tefera 1999). Only a tiny elite of users in Africa can access digital resources that are in many cases financed by Northern NGOs, rather than by deep-seated local development. The production of new digital content in Africa will therefore continue to fall behind that in the North, yet there are some African success stories, such as online newspapers, selected journals, and portals. This limited progress offers space for new opportunities for partnership between Africanists and Africans, but there are also dangers to face.

In a world of the internet and globalized economies, the forms of creating, distributing, and exploiting information have changed markedly (Limb 2004a). New information and communication technologies (ICTs) now enable publishers, scholars, and librarians with adequate resources to maximize access to information about Africa. Numerous exciting projects, some mainstreamed, are making available in an electronic format scholarly research and teaching resources for studying Africa. These initiatives often involve a high degree of cooperation among partners, a wide range of formats—from archival collections and ephemera to scholarly journals or audio-visual material—and most are committed to the Open Archives Initiative.

In contrast, corporate powers dominate publishing and the emergent global-information-policy regime. Cogburn warns of the growing power of global economic commerce and its declining interest in bridging “digital divides,” between rich and poor nations or between classes. African stakeholders such as South Africa and Egypt promote a vision of a global information infrastructure to maximize social development, but OECD countries advocate a narrower model, based on private profit. South Africa, argues Cogburn, has a capacity to moderate global information policy in favor of the South, but important changes to limit the autonomy of developing countries in this field are under way (Cogburn 2004:155, 168).

The struggle for control over telecommunications will be a vital one in coming years, and so the nature of the digitization of Africa is important to understand. Africans should be able to control the rate and nature of digitization of their own intellectual heritage, and they should have access to these resources unhindered by external interests. For some African countries, the situation is particularly pressing. Namibia, for instance, has seen its intellectual heritage divided up and carried away by three consecutive colonial powers (Germany, Britain, and South Africa), with its archives scattered across these countries. Hence, digital repatriation, or at least mirroring of these archives, has become urgent (Namhila 2005; McLune 2004). From another angle, digitization offers some solace to the “book famine” that continues to wrack African educational institutions. In many African libraries, comprised largely of “shelves gathering mounds of dust from emptiness[,] . . . e-publications can provide a respite to book-and[-] journal-hungry faculty” (Zezeza 2002).

The Digitization of African Studies: Progress and Challenges

Today, wherever one looks, there are new digital resources on Africa: online newspapers, issues of scholarly journals, GIS maps, government documents, archives, and networks bringing online book reviews or e-conferencing. There is a proliferation of online distance learning or “virtual university” packages, some based in Africa. Students everywhere, including in Africa, are embracing new online learning models (Limb 2005; UNESCO 2004). Economies of scale of digital products induce administrators to embrace web-based learning on a wide scale, and governments are keen to support related research and pilot projects. For example, the Vice Chancellor of the University of Dar es Salaam has strongly supported digital enterprises; and Technological Innovation and Cooperation for Foreign Information Access, a program of the U.S. Department of Education, has assisted cutting-edge projects on Africa, such as the African e-Journals Project.

Some writers predict changes even more dramatic. The digital revolution, argues Raschke (2003), may be creating the basis for a “global university” involving the end of the university as we know it—replaced by a “hyper-university” with a new epistemology of learning and new digital learning architecture. A “global university” is still elusive in any truly global sense, especially given that the latest rounds of globalization have destroyed a large part of African universities; however, these trends certainly are globalizing in nature and effect, with the “information age” now deeply embedded in learning, though digital scholarship of an open-access nature still counts little toward academic tenure (Andersen 2004). Digital tools and resources have made it possible for lifelong learning to become a reality—and as it becomes an expectation for employment, and not just an interesting experiment, so digital transformation will become even more deep-rooted in society.

Digital Projects about Africa

There are many examples of successful cooperation in building digital libraries with African content, both full-text and metadata/databases. Most of these are centered in the North. Web resources are an area of increasing collaboration. For example, the Political Communications Web Archive Project (www.crl.edu/content/PolitWeb.htm) seeks cost-effective ways to preserve websites produced by nongovernmental organizations and political actors in Africa and elsewhere, and has produced useful data on Nigerian elections. A rather different project, the eGranary Digital Library, based at the University of Iowa (www.widernet.org/digitalLibrary), aims to provide e-resources offline via intranets to African institutions lacking fast internet access (see Missen and Miner 2005, in this issue). To help obviate the problem of bandwidth cost, it has helped install digital libraries by deploying very large hard drives, particularly in Nigerian universities, but also in a growing number of other African universities.

The African Online Digital Library (www.africandl.org) aims to provide a fully accessible online repository of multilingual, multimedia materials. The partners, at Michigan State University and in Senegal, published their “best practices,” which stress that “digitizing projects must respect the rights of individuals, cultures,” and nations that own the materials. Digitized materials include text collections on AIDS in West Africa, visual galleries on Sufism in Senegal, and interviews with Africanist Philip Curtin. Their work with audio digitization is particularly innovative: an example is “The history and culture of Futa Toro, Senegal and Mauritania,” which provides audio clips of interviews by historian David Robinson in Pulaar, linked to scrolling English or French transcripts. Other audio-visual digitization projects of value to scholars include photographic (The Winterton Collection of East African Photographs 1860–1960) and poster galleries at Northwestern University’s Herskovits Library, and Somali posters at Indiana University, which also includes digitized field notes of a researcher in the Sudan. The University of Wisconsin at Madison has digitized early imprints on early West African history as part of “Africa Focus: Sights and Sounds of a Continent” in its digital library. Online libraries at York University (the Nigerian Hinterland Project and Harriet Tubman Resource Center on the African Diaspora) and the University of Virginia present full-text material on slavery.

There are interesting digital projects in other Western countries. The French Bibliothèque Nationale’s Gallica Project has digitized many rare books on pre-colonial Africa, the National Archives in Britain has scanned documents of interest to Africanists, and the Museum of Central Africa in Belgium is digitizing Congolese historical photographs. The Frankfurt Archives of German Colonial Photographs has African content.

Journal publications have seen the most effective and popular developments. The escalating price of scientific and technical journals, which remain the bedrock of research, has contributed significantly to the

educational crisis in Africa. Financial and technical problems facing African scholarly journals are immense. To try to resolve this problem, Africanists in the North have begun to collaborate with publishers and editors of African journals (Limb 2004a).

A concrete example of international cooperation in this area is The Essential Electronic Agricultural Library (TEEAL), developed as a CD-ROM² library available only to developing countries. The package, available only by purchase, is updated annually and contains more than 140 journals selected by scientists as the most essential in the field; in 2003, it comprised more than 1.8 million pages on 381 compact disks (Dauphine, Ochs, and Joos 2003). TEEAL is not networked, and is being superseded by a portal, Access to Global Online Research in Agriculture (AGORA: www.aginternet.org), providing free access to more than 500 journals to institutions in eligible developing countries, those with annual per capita income less than U.S. \$1,000: thus Sierra Leone, Burkina Faso, and Senegal are eligible, but South Africa, Egypt, and Botswana are not. Launched in October 2003 under the auspices of the U.N. Food and Agriculture Organization, AGORA involves collaboration of public and private partners, including publishers, yet many African institutions need expensive infrastructure improvements to exploit it fully, and they therefore need to maintain access to both CD-ROM and online journal data.

The African e-Journals Project (AEJP: africa.msu.edu/aejp), based at Michigan State University, aims to improve the accessibility, visibility, and viability of African journals by helping African journals develop full-text digital versions of current issues and backsets (see Smart 2005, in this issue). Participants achieved only modest progress in placing current issues in Western portals, but gained visibility and valuable experience, and learned lessons about the limitations of working with corporate publishers having a limited interest in Africa. In late 2005, the full backsets of some dozen African journals across several disciplines will be freely available to all scholars globally.

African Journals Online (AJOL: www.ajol.info), initially based at the International Network for the Availability of Scientific Publications in Oxford, but in 2005 relocating to Africa, where it is supported by NISC, has the advantage of being an inexpensive model to set up and maintain (see Smart 2005, in this issue). It has successfully promoted African journals and helped develop technological skills through management and training workshops on digitization; however, the journals have not greatly increased subscriptions (Rosenberg 2003), and the service provides tables of contents, abstracts, and article delivery, rather than full-text.

AEJP and AJOL have run up against problems of long-term viability and the competitiveness of a global publishing market little interested in African journals. Both projects have been funded from the North. A more difficult and long-term, but inevitably necessary, aim pursued by both projects is to return the hosting of these journals and their discourses to Africa.

Digital Projects in Africa

In Africa, with limited financial resources, emerging models of digital-based scholarship often combine commercial and open access. Digital projects promise access to scholarly resources and new opportunities for partnership with African Studies practitioners in the North (Limb 2004b).

The use of e-journals is growing in Africa, aided in part by the underwriting of “free” e-journal provision by donors, but also involving local experimentation. Some projects involve international bodies such as UNESCO and IFLA working with Pan-African institutions like the Council for the Development of Social Science Research in Africa (CODESRIA) and the Association of African Universities. Recently, CODESRIA and the Organization for Social Science Research in Eastern and Southern Africa (OSSREA) have digitized issues of their journal—initiatives also aimed at helping re-launch some moribund journals.

The most rapid growth of e-journals is, naturally enough, in South Africa, the most technologically advanced African country. (One might ask—tongue in cheek—whether “digital imperialism” from the North, or from South Africa, will reach tropical Africa first in a new “scramble for Africa.”) A South African company, Sabinet (www.sabinet.co.za/journals), offers a package of more than 190 full-text South African (plus a handful of West and East African) journals at a price reasonable for many local subscribers, with a subsidizing overseas price likely to attract wealthier research libraries. For the first time, subscribers now have fast, full-text access to African journal scholarship.³

If African e-journal ventures such as Sabinet Online succeed, then in one sense we may be able to say “*Mayibuye i’Africa*”—that these journals have indeed returned to Africa; however, Sabinet’s model is commercial and based on South Africa’s greater financial muscle, and thus may not prove a viable model elsewhere. Emulation of Sabinet models in other countries is one possible scenario; another is merger into Sabinet. One problem indicated by earlier studies (Mgobozi and Ocholla 2002) is limited faculty use of e-journals, but this situation is likely to change.

The success of e-journals involves stable and accessible web-storage. Decreasing digital storage costs and successful storage projects such as JSTOR—now with a suite of high-quality Africana journals and eager to extend to Africa itself—suggest digital preservation will gain in significance (CLIR 2002; Schonfeld 2003). In this regard, it is interesting that the Digital Imaging Project of South Africa (DISA: disa.nu.ac.za) is modeling itself partly on JSTOR’s self-sustaining, not-for-profit principles. In its first phase, DISA successfully digitized forty hard-to-locate anti-apartheid periodicals. It provides full-text searching, and makes available local resources to national and international scholars without removing the documents from local context (Pickover and Peters 2002).

Other formats besides journals are being digitized in Africa. The University of South Africa has digitized letters of Mahatma Gandhi (Watkins

2001). An extensive DISA second stage will digitize archival sources and link up with another Mellon-funded initiative, ALUKA, which has identified three initial African areas of digitization: liberation movements, botany, and heritage. ALUKA's mission is to "build and support a sustainable, online database of scholarly resources from the developing world, beginning in Africa" (www.ithaka.org/aluka). Cooperation is evident in the formation of national ALUKA committees in Southern African countries (see Isaacman, Lalu and Nygren, in this issue). Reports, books, and audio-visual resources are being added to new digital libraries in several parts of Africa, most widely in South Africa, by government departments and a growing number of educational ventures, such as South African History Online. In West Africa, the African Language Materials Archive, an initiative of the West African Research Association, the Council of American Overseas Research Centers, Columbia University Libraries–African Studies, and UNESCO, has digitized a range of written genres in African languages. Special libraries in Gaborone, Botswana, aim to digitize and then share their core collections (Molefe 2003).

Accompanying such full-text digitization projects, both in Africa and the North, are various online bibliographic services. The AAU/ARL Global Resources Program's African Newspapers Union List has developed a database of newspaper holdings based on cooperative input. Citation databases have been slow to develop in Africa because of weak local publishing and lack of interest by overseas companies; however, NISC South Africa, linked to an American parent company but with local staff, has developed sophisticated, though expensive, databases, such as *African Studies* and *South African Studies* (now available as a single product, Africa-Wide NiPad), which index African literature, often more extensively than commercial databases of the North, and provide a limited amount of full-text material, mainly news reports. Another useful citation database is the *Quarterly Index of African Periodical Literature*, funded by the United States, but produced in Kenya. These African-based, though sometimes foreign-controlled, databases often provide better searchability of African journal content than Northern databases—a major achievement, suggesting solutions can be found in Africa, particularly when Africans work with overseas partners. Such citation resources supplement and can help stimulate full-text projects, but in Africa, there is, so far, little combination of the two services, as seen in Western commercial resources that link bibliographic and full-text access.

Other, more independent, African commercial ventures are slowly emerging. A viable African commercial portal presenting hard-to-obtain ephemera is Kwetu.Net ("our home" in Swahili), which is developing an arsenal of full-text sources on East Africa. The product chiefly comprises reports, photographs, and some master's theses, obtained from partners. In such experiments, there often is a need to improve search capacity and quantity of data—which could well happen, given adequate overseas subscriptions and local mastering of technology.

The digitization of theses has been of considerable interest to universities since the early 1990s. Pilot projects include the Networked Digital Library of Theses and Dissertations. ProQuest has developed a wide-ranging, if expensive, subscription-based service for digital dissertations, but includes only bibliographic access to African theses. Such initiatives are now having global impact (Hagen, Dobratz, and Schirmbacher 2003). In Africa, an ambitious, continent-wide venture is the Database of African Theses and Dissertations (DATAD: www.aau.org/datad) of the Association of African Universities, a venture that, to disseminate African theses, has built a pilot database of theses and is scoping full-text services with partners such as the Center for Research Libraries (CRL). Various South African universities are placing their recent theses online, some in open access. The sale of dissertations has been more successful in the United States, with a long tradition of publishing theses, than in Europe or Africa, where universities have adopted a more proprietary attitude; however the trend to open-access digital dissertations at the universities of the Witwatersrand, Pretoria, and UNISA indicates a shift in attitude.

Recent African digital initiatives such as DISA, Kwetu.Net, and DATAD all involve cooperation. DISA is a cooperative venture among South African librarians, archivists, and scholars, one that deftly deploys national skills, but also draws on overseas funding and expertise. Kwetu.Net has signed up African governments and universities as partners. DATAD has shared new skills among a range of African universities and invited overseas experts to participate. By developing effective national and international partnerships, based on mutual benefit, projects maximize their potential. Substantial digital libraries *can* be constructed in the South, as witnessed by the Latin American Council for the Social Sciences and the Scientific Electronic Library Online in Brazil, both making good use of cooperation. But wider issues will determine the success of digital ventures in Africa. Mutula (2004) argues that building African digital libraries requires democratic access to information and adequate and relevant local content for users. It also requires sustainability and the resolution of acute legal and commercial problems.

Issues

Three basic issues surround these trends: improving access, maintaining sustainability, and resolving questions of fairness and justice. All are interrelated, and attempts to solve one without solving the others may well create further problems.

Access

In Africa, achieving and maintaining access to digital scholarly resources will increasingly be a major educational issue. Class and other inequalities

and structural problems mean that the application of digital technologies in Africa is so skewed that there is not only a North-South digital divide, but also one *within* African countries. Internet connection costs will remain high; few Africans can afford to subscribe to journals, let alone a digital format (Robins and Hilliard 2002; Mwesige 2004). Without the supportive social context and necessary infrastructure, digital ventures will be uncertain, and may even perhaps place research productivity at risk (Okunoye and Karsten 2003). ICTs in Africa are still in an experimental phase, but in the North they are in the application phase.

E-publishing in Africa has the potential to achieve savings, greatly increase speed of delivery of information within African, and allow African information products to reach a global audience. African publishers, scholars, librarians, and administrators increasingly perceive such potential benefits and seek to optimize their use (Mutshewa and Rao 2000). At the same time, there are disturbing but predictable trends toward takeovers of African publishers by transnational publishers interested in absorbing—rather like giant vacuum cleaners—all manner of digital content. Concomitantly, there are fears that overseas aid breeds dependency and that the North continues to exploit African indigenous knowledge (Snyman 2002).

It is, of course, an illusion to imagine that a digital revolution will solve all problems of African publishing and education; rather, the difficulties and initiatives enumerated above suggest that in African situations, a balance between more traditional and high-tech technologies is more appropriate than large-scale digitization. Many experts consider the most reliable form of preservation to be microform, and doubts about Web reliability and longevity are heightened in African conditions. At first glance, Africanists may be inclined to continue to place their faith in microform. After all, a sizable portion of scholarly resources is already held in microfilm collections, such the Cooperative Africana Microform Project at CRL; yet CRL is moving to digitize collections and meet information requests digitally. New digital microfilm reader-scanner technology allows the processes of filming and digitization to proceed in tandem, and scholars can save microfilm frames to CD-ROMs in PDF, with exciting possibilities for teaching and publishing on Africa (Limb 2003). Digital preservation is likely to gain in salience. Creative solutions to problems of limited bandwidth, such as the eGranary Digital Library, offer ways to improve local access. Digitization will enable greater access to African journals and theses in the North, and will reach local users in Africa if access becomes more affordable and sustainable.

Sustainability

Providing long-term solutions to the deep-seated crisis of access to information in Africa requires wide pan-African and international collaboration and further development of Africa-based resources and competencies. The future appears to lie in the combination of open access with not-for-profit models to improve access to scholars globally and ensure sustainability.

The “Open Digital Library” model posits that digital libraries can more easily be built from simple building blocks based on the Open Archives Initiative and its reliance on metadata harvesting than on monolithic software applications. Services can be broken up into networks of simple Web service like components (Suleman et al. 2003). The implications for African libraries would be cost-savings and less dependence on proprietary software, and hence more flexibility to explore local-level digital initiatives.

The future is likely to see ever-increasing demands for digitization of greater and greater amounts of data. Who will fund such vast schemes? How will African libraries meet the costs of ongoing server space and labor for maintenance? In the North, partnerships have been crucial in expanding library involvement in digitization, but the level of cooperation in Africa has been limited, both internally and with partners in the North. Separate grant projects based in individual Northern universities have been the norm, rather than the forging of international or national alliances to draw on broader funding bodies, such as, for example, UNESCO and the European Union.

Sustaining scholarly digital projects in Africa requires the resolution of central issues. Given continuing structural weaknesses in African economies and related fragile social infrastructure, which increase the risk of long-term ICT investment, the relevance of many Northern models to Africa is questionable. Digitization in Africa must understand local context in a way that unites technical, socioeconomic, cultural, and organizational conditions (Higgo 2003; Mursu et al. 2003). There is a danger that purely technocentric perspectives will not pay enough attention to national or local conditions. Successful digital projects in Africa have been supported by international development agencies, such as the World Bank. The World Bank-sponsored African Virtual University (AVU) delivers online education, for example at Kenyatta University in Kenya and the Campus Numérique Francophone de Dakar in Senegal, but has more recently moved to an African-ownership mode, linked to other African universities, which had perceived AVU as a competitor (Juma 2003). Often, the narrow economic basis of sponsor views of the link between ICTs and development stifles wider development and “locally meaningful ways of accommodating ICTs” in socioeconomic activities that drive the *process* of long term ICT innovation and its creative application, without the benefit of socioeconomic progress over time, there is a danger that misguided applications of ICTs in Africa can actually widen digital divides (Avgerou 2003). A way to mitigate the rate of growth of this divide is to make ICT development more appropriate to local context—to what Habermas calls the public sphere, and characterized as “less cyber, more café” (Salvador, Sherry, and Urrutia 2003).

Can we really talk of global digitization or internet freedom if the nature of information production and distribution is so one-way? African institutions need extensive infrastructure improvements to exploit these schemes, and there are doubts about ongoing costs and long-term sustainability if donors pull out. Marketing of digital content from Africa to the North

may help mitigate inequalities of access and provide funds to make this access more sustainable. Given that the economic muscle needed to sustain such development remains strongly weighted against African countries, a shift in the ethical-legal framework is a way to pursue this goal.

Legal, Ethical, and Commercial Issues

Recently, serious new legal challenges to the unhampered development of digitization projects, including those in African studies, have arisen. These include growing threats of censorship, restrictions on accessing information because of monopoly-ownership patterns, and yawning inequalities of the “digital divide.”

Both state and private interference now threaten open access across the globe. In the political field, Africa is not immune from what Breckenridge (2005) terms the “Peril of Digital Government,” which affects rich and poor alike. Just as the Zimbabwean government openly censors internet and other communications, the U.S. Patriot Act⁴ and similar legislation in other countries has brought increased state intrusion, which may intensify as governments and corporations acquire even greater power to collect and analyze data about people. The involvement of private companies in sensitive electoral practices has heightened concern, as have widespread cases of identity theft, telemarketing, and collection of personal data.⁵ The U.S. Digital Millennium Copyright Act 1998 prohibits the circumvention of copyright laws, and the Copyright Term Extension Act, upheld by the U.S. Supreme Court in January 2003 and strongly supported by large corporations, extends copyright protection by twenty years. The Agreement on Trade-Related Aspects of Intellectual Property Rights of the World Trade Organization, and the Copyright Treaty of 1996, enhance global monopoly power (Lor and Britz 2004). The implications of these commercial and legal trends are disturbing: those advancing down the road of public-domain digitization may find projects cramped or jeopardized by legal restrictions.

Monopolistic trends have not gone unchallenged. In October 2004, “developing” countries, including Kenya, Sierra Leone, South Africa, and Tanzania, successfully lobbied the World Intellectual Property Organization to integrate development priorities into intellectual property policy (AfricaFocus 2004). Moreover, the digital milieu makes it easier to cooperate at an institutional level. SPARC (The Scholarly Publishing and Academic Resources Coalition) and the Open Archives Initiative unite scholars, librarians, and publishers to create and champion open-access communication. These allies emphasize the initiative of scholars themselves and the need for copyright to reside primarily in authors, and they collaborate in constructing new systems of distributing knowledge, such as open-access e-journals, to bypass legal impediments to free access to information. More needs to be done in this regard in the field of African studies. It is perhaps time for a pan-African coalition akin to SPARC. Bodies such as the African Studies Associations of the United Kingdom and the United States could

establish standing committees with African counterparts to promote these solutions.

In Africa, gaping digital divides are widening. The cost of information is always rising, and application of information technology comes with start-up and maintenance prices that in most countries are beyond budgetary capacities. Without start-up and ongoing technical support, and without effective connectivity, African digitization projects may waste vital resources. Not only are digital divides growing, but serious ethical questions are being raised by ongoing patterns of North-to-South and South-to-North information exchange. To take one example, Northern pharmaceutical companies steal information about indigenous medical knowledge from Africans who lack patents and are too poor to buy back their own knowledge as drugs (Snyman 2002).

A possible solution is to develop codes of conduct. The inculcation of a sense of ethical responsibility can at least establish a foundation of more principled behavior, and codes of ethical practice may help turn the use of ICTs toward a more caring and socially responsible role (Smith 2001). The digitization of sensitive cultural materials presents an opportunity for digital repatriation to countries of origin; however, any self-regulation without the sanction of legal enforcement runs the risk of being ignored (Hauptman 2001; Schwartz 2001), and as museums and libraries in the North progressively digitize their collections, another layer of ownership is added. There is a need to go beyond mere statements of principles and apply them consistently.

The ethical dimension is crucial here because, left purely to private market forces, the value of African intellectual resources depreciates markedly. Perhaps more significantly, the perception of domination or exploitation in recent relations between Africa and the North in the field of publishing and archives may complicate future projects (Britz and Lor 2003; Limb 2002a). With proper attention and commitment to ethics, digital projects can be a viable medium for equitably sharing resources.

Some Western digital projects have temporarily rerouted expensive information sources to African institutions and helped build their capacities. Digitization thus appears to offer partial solutions to problems such as journal visibility, archive preservation, access to information, and vulnerabilities of tropical archives to the vagaries of climate, politics, and economics; however, the spread of the internet is more likely than not to intensify global economic and cultural domination by the North, especially given the basic inequality of power globally, the high price of information, and the dominance of "ownership over access" in intellectual property law (Lipinski and Britz 2000; Phukan and Dhillon 2001). Digitization is thus no panacea for African publishing woes; it may even intensify problems. The effect of increasingly globalized and expensive information is likely to have a negative impact on libraries and publishers struggling to survive in Africa, and unless effective countermeasures are undertaken, their resources will remain scanty and at risk. Though this may appear to contradict the

advantages inherent in new technologies, the restriction and commercialization of information, particularly in African states with fragile civil societies and weak information infrastructure, poses a major barrier, not only to the free spread of information, but to the very success of digital projects.

Building more websites or digital libraries in African countries, or at least based on their information resources, may be one solution, but continuing scarcities of local resources are likely to make such projects future casualties of the technology gap. There also is a continuing need to protect the intellectual property and cultural heritage of Africans in times of transition to new technologies. South Africans Pickover and Peters argue: “the lure of financial aid has . . . spawned a new form of imperialism reinforcing the digital divide, as countries in the North loot the intellectual property of an African heritage in the name of preservation”(2002:18). Their compatriots Lor and Britz (2002) add that “information imperialism” involves not just North-South, but South-North disparities in information flows. In other words, Africans have a right to distribute their own information products to the North in an equitable way. Others are less concerned, and see involvement from the North in digitization projects such as ALUKA as more disinterested, more helpful, and far better than the physical removal of archives from Africa (Saunders 2005); however, ongoing questions are likely to include: how can Africanists in the North find ways to avoid and thwart “information imperialism”? and how can they help Africans distribute their information resources in the North?

A further ethical dilemma, argues Britz (2004), concerns conflict of interests, chiefly in the economic domain, between the right to intellectual freedom, seen as a common good based on the right to know and implying access to others’ intellectual products, and the right to intellectual property. Using examples from South African higher education, he questions whether the ownership of information should be valued higher than access, and suggests the challenge is how to balance the right to own with the right to know. In this context, the need for ethical approaches to digital partnerships becomes even more necessary. The alternative is to regard African information resources as mere commodities on the open market for digital raw materials.

Africanists should stand up firmly for all civic and human rights: the right to freedom of speech, privacy, access to information, and openness in government and business. Also, they should network more effectively with colleagues in Africa.

Conclusion

Over the next decade, globalization is likely to magnify the trends I have outlined. Scholars and their institutions in the North will benefit from increased access to digitized data about Africa, whereas scholars in Africa are unlikely, at least in the short term, to enjoy anything near similar

access. To provide long-term solutions to deep-seated educational and publishing crises in Africa, it will be necessary to develop Africa-based resources and competencies, as well as to strengthen the international collaboration glimpsed in the above-mentioned projects. In all such projects, the future may lie in the combination of open access with not-for-profit models, to improve access to scholars globally and ensure the sustainability of the projects.

Partners in projects such as AJOL and AEJP have registered progress of a technical kind. Attention to ethical principles and the forging of mutually beneficial partnerships in these and similar projects has meant that African partners have benefited from capacity-building workshops, aid moneys, and copies of digital versions of their publications with no strings attached on their further use, yet it remains unclear whether such transfers are sustainable in the long run, as financial input has largely been drawn from one-time grants, or even whether all players likely to be involved in the digitization of Africa are persuaded of the need for disinterested assistance to African partners. Some major commercial publishers have committed to projects such as AGORA, but external aid money often underwrites such “support.” Not all partners seem to have a clear and unambiguous commitment to providing open access for Africans. By 2004, an agreement had been signed between ALUKA and DISA—a good indication of developing partnerships and a willingness to share digital “raw materials.” But some in the North are hesitant to extend open access across Africa, and their hesitation may impede healthy partnerships. The delivery of effective sustainable digital products may indeed require some form of compensation to commercial publishers, but in the near future, this is realizable only in the North, not across Africa.

The recent modest successes by pan-African or regional institutions such as CODESRIA and OSSREA in digitizing back issues of their journals, or of Sabinet in developing an impressive suite of commercially marketed e-journals, suggests the next phase of the digitization of Africa may come from Africans themselves. The challenge for scholars, librarians, publishers, and others involved in the digitization of African resources is to ensure access, sustainability, and fairness in the sharing of these resources. These goals can be furthered by close cooperation with and listening to African partners, and by the design and implementation of models that effectively deliver information resources over the long term in mutually beneficial ways.

NOTES

1. I use the term digitization both in its more common definition (as the process of creating a digital representation of an original text by scanning or digital photography), and in the broader view (as converting analog information and all kinds of formats—text, graphics, sound—into computer-readable binary or digital information). I address significant trends

- in all forms of digital scholarly resources on and in Africa, whether full-text or meta-data, because projects addressing these areas are often complementary and mutually stimulating.
2. Other CD-ROM libraries developed for African users include UNESCO's Digital Anthologies for Development, but UNESCO is now encouraging the application in Africa of open source Greenstone Digital Library software for creating digital Libraries.
 3. Sabinet users at the University of Botswana are benefiting from this access (discussion with Leapetswe Maletse, July 2005); however, the University of Botswana and its South African counterparts are wealthier than most universities elsewhere in Africa.
 4. This Act threatens free and open access to information in various ways: section 215 allows search warrants for educational, library and bookshop records and bars librarians from making such actions public; Section 206 allows use of "roving wiretaps" and secret court orders to monitor e-communications; Sections 214/216 allow secret routing of Net traffic. On librarians' dilemmas over such censorship and intrusions on privacy see American Library Association (2003) Intellectual Freedom Issues: USA PATRIOT Act: www.ala.org and N. Kranich (2003) The Impact of the USA PATRIOT Act on Free Expression. New York: Free Expression Policy Project: www.fepproject.org/commentaries/patriotact.html.
 5. On the long-term interest in personal data use by the South African state, see Breckenridge 2005.

REFERENCES CITED

- AfricaFocus. 2004. Africa: Intellectual Property. *AfricaFocus Bulletin*, 7 November. Retrieved 5th July 2005 from: www.africafocus.org.
- Altbach, Philip, and Damtew Tefera, eds. 1999. *Publishing in African Languages: Challenges and Prospects*. Chestnut Hill, Mass.: Bellagio.
- Andersen, D. L., ed. 2004. *Digital Scholarship in the Tenure, Promotion, and Review Process*. Armonk, N.Y.: Sharpe.
- Avgerou, Chrisanthi. 2003. The Link between ICT and Economic Growth in the Discourse of Development. In *Organizational Information Systems in the Context of Globalization*, edited by M. Korpela, R. Montealegre, and A. Poulymenakou. Boston: Kluwer.
- Breckenridge, Keith. 2005. The Biometric State: The Promise and Peril of Digital Government in the New South Africa. *Journal of Southern African Studies* 31(2): 267–282.
- Britz, Johannes. 2004. The Right to Know versus the Right to Own: A South African Case Study. *EthiComp Journal* 1(1). Retrieved 5th July 2005 from www.ccsr.cse.dmu.ac.uk/journal.
- Britz, Johannes, and Peter Lor. 2003. A Moral Reflection on the Information Flow from South to North: An African Perspective. *Libri* 53(3):160–173.
- CLIR. 2002. *Building a National Strategy for Digital Preservation: Issues in Digital Media Archiving*. Washington, D.C.: Council on Library and Information Resources.
- Cogburn, Derrick L. 2004. Elite Decision Making and Epistemic Communities: Implications for Global Information Policy. In *The Emergent Global Information Policy Regime*, edited by Sandra Braman. New York: Palgrave Macmillan.
- Dauphine, Nico, Mary Ochs, and Nicole Joos. 2003. TEEAL: Bringing Scientific Literature to the Developing World: The Essential Electronic Agricultural Library. *Online Information Review* 27(1):51–54.

- Dick, Archie. 2002. *The Philosophy, Politics, & Economics of Information*. Pretoria: UNISA Press.
- Hagen, John H., Suzanne Dobratz, and Peter Schirmbacher. 2003. Electronic Theses and Dissertations Worldwide. *D-Lib Magazine* 9(7/8). Retrieved 5th July 2005 from www.dlib.org.
- Hauptman, Robert. 2001. Technological Implementations & Ethical Failures. *Library Trends* 49(3): 433–440.
- Higgo, Higgs. 2003. Implementing an Information System in a Large LDC Bureaucracy: The Case of the Sudanese Ministry of Finance. *Electronic Journal on Information Systems in Developing Countries* 14(3):1–13. Retrieved 5th July 2005 from www.ejisd.org.
- Juma, Magdallen. 2003. The African Virtual University: Kenyatta University, Kenya: An Evolution of an Existing Institution. In *The Virtual University Models and Messages: Lessons from Case Studies*, edited by Susan D'Antoni. Paris: UNESCO. Retrieved 14th July 2005 from www.unesco.org/iiep/virtualuniversity.
- Limb, Peter. 2002a. Accessing African Archives, Libraries and Journals: Partnerships, Ethics and Equity in the 21st century. *African Research and Documentation* 90:29–41.
- . 2002b. Ethical Dilemmas in Southern African Archives and Libraries. *Innovation* 24:51–58.
- . 2003. CAMP and African Newspaper Microfilm Preservation and Digitisation. In *Opportunities for Newspaper Preservation and Access in South Africa: Papers Presented at the South African Newspaper Seminar March 2003, Cape Town*. Retrieved 14th July 2005 from www.nlsa.ac.za/docs/NewspaperSeminar.pdf.
- . 2004a. *Digital Dilemmas and Solutions*. Oxford: Chandos.
- . 2004b. Recent Developments in African Scholarly E-Resources. *Focus on the Center for Research Libraries*. 23(4):8–9.
- . 2005. Africana Periodicals: Problems and Progress of Collection and Publication in a Globalizing Information Economy. In *Africanist Librarianship in an Era of Change*, edited by Vickie Ewalds and David Henige. Lanham, Md.: Scarecrow Press.
- Lipinski, Tomas, and Johannes Britz. 2000. Rethinking the Ownership of Information in the 21st Century: Ethical Implications. *Ethics and Information Technology* 2(1):49–71.
- Lor, Peter, and Johannes Britz. 2002. Information Imperialism: Moral Problems in Information Flows from South to North. Paper presented at the Ethics of Electronic Information in 21st Century Symposium, Memphis, Tenn.
- . 2004. Knowledge Production, International Information Flows and Intellectual Property: An African Perspective. Paper presented at the Association of African Universities DATAD Workshop on Intellectual Property, Governance, Dissemination and Funding Strategies, Accra, Ghana, February.
- McLune, Jade. 2004. Aims and Significance of the Archives of the Anti-Colonial Resistance and Liberation Project in Namibia. Paper presented at the Conference on International Anti-Apartheid Movements, Durban, South Africa, October 2004.
- Mgobozi, Margaret N., and Dennis N. Ocholla. 2002. The Use of Electronic Journals for the Dissemination of Scholarly Information by the University of Natal and the University of Zululand. *South African Journal of Libraries and Information Science* 68(2):81–93.
- Molefe, Chedza. 2003. Current Developments in Library Cooperation among Special Libraries in Botswana. *South African Journal of Libraries and Information Science* 69(1):62–70.
- Mursu, Anja, Kalle Lyytinen, H. A. Soriyan, and Mikko Korpela. 2003. Identifying Software Project Risks in Nigeria: An International Comparative Study. *European Journal of Information Systems* 12(3):182–194.

- Mutshewa, A., and K. N. Rao. 2000. Enhancing Access through Electronic Resources: The University of Botswana Experience. *Library Hi-Tech* 18(2):316–320.
- Mutula, Stephen. 2004. IT Diffusion in Sub-Saharan Africa: Implications for Developing and Managing Digital Libraries. *New Library World* 105(7–8):281–289.
- Mwesige, Peter. 2004. Cyber Elites: A Survey of Internet Café Users in Uganda. *Telematics & Informatics* 2:83–101.
- Namhila, Ellen Ndeshi. 2005. The National Archives of Namibia. *News from the Nordic Africa Institute* 2:15–17.
- Okunoye, Adekunle, and Helena Karsten. 2003. Global Access to Knowledge: Findings from Academic Research Organizations in Sub-Saharan Africa. *Information Technology & People* 16:353–373.
- Phukan, Sanjeev, and Gurpreet Dhillon. 2001. Ethical and Intellectual Property Concerns in a Multicultural Global Economy. *Electronic Journal on Information Systems in Developing Countries* 7(3):1–8. Retrieved September 2004 from www.ejisd.org.
- Pickover, Michelle, and Dale Peters. 2002. DISA: An African Perspective on Digital Technology. *Innovation* 24:14–20.
- Raschke, Carl. 2003. *The Digital Revolution and the Coming of the Postmodern University*. London: Routledge.
- Robins, Melinda B., and Robert L. Hilliard. 2002. The Future of Cyberspace in Africa. In *Beyond Boundaries: Cyberspace in Africa*, edited by Melinda B. Robins and Robert L. Hilliard. Portsmouth, N.H.: Heinemann.
- Rosenberg, Diana. 2003. *African Journals OnLine (AJOL): An Internal Evaluation 2000–2002*. Oxford: INASP. Retrieved 30th July 2004 from www.inasp.info/ajol/evaluation2002.
- Salvador, Tony, John W. Sherry, and Alvaro Urrutia. 2003. Less Cyber, More Café: Design Implications for Easing the Digital Divide with Locally Social Cyber Cafes. In *Organizational Information Systems in the Context of Globalization*, edited by M. Korpela et al. Boston: Kluwer.
- Saunders, Christopher. 2005. A Historian's View. *News from the Nordic Africa Institute*. 2: 26–27.
- Schonfeld, Roger C. 2003. *JSTOR: A History*. Princeton: Princeton University Press.
- Schwartz, Mark S. 2001. The Nature of the Relationship between Corporate Codes of Ethics and Behaviour. *Journal of Business Ethics* 32(3):247–262.
- Smith, Martha. 2001. Global Information Justice: Rights, Responsibilities, and Caring Connections. *Library Trends* 49(3):519–537.
- Snyman, Retha, ed. 2002. *SCECSAL 2002: From Africa to the World: The Globalisation of Indigenous Knowledge Systems*. Pretoria: Library and Information Association of South Africa.
- Sturges, Paul, and Richard Neill. 1998. *The Quiet Struggle: Information and Libraries for the People of Africa*. 2nd ed. London: Mansell.
- Suleman, Hussein, Edward Fox, Rohit Kelapure, Aaron Krowne, and Ming Luo. 2003. Building Digital Libraries from Simple Building Blocks. *Online Information Review* 27(5):301–310.
- UNESCO. 2004. *Evaluation of Virtual Reality in Africa: An Educational Perspective*. Paris: UNESCO.
- Watkins, Ansie. 2001. The Digital Conversion of the C. M. Doke Collection of Personal Letters from M. K. Gandhi, Together with Other Related Materials: A Case Study by the UNISA Library Digital Resource Centre. *Mousaion* 19(2):90–99.
- Zezeza, Paul 2002. The Dynamics of Book and Library Development in Anglophone Africa. In *The Book Chain in Anglophone Africa*. Oxford: INASP. Retrieved 30th July 2005 from www.inasp.info/pubs/bookchain/profiles/zezeza.html.