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## Development

For those countries throwing off the yoke of Western colonialism during the latter half of the twentieth century, the founding of new universities represented a particularly promising assertion of modern nationhood. Certainly, many of these communities and cultures had long-standing scholarly traditions that dated back well before the spread of European imperialism. Across the Islamic world, for example, scholarly libraries and colleges, such as the magnificent Alhambra in Granada, had long been kept open to scholars from abroad (Singleton 2004). During the final decades of the twentieth century, however, the modern university took hold around the world, creating something of a global academic community. Certainly, the prevalence of Western-trained faculty in many of the new institutions contributed to the sense of a larger community. The scholarly journal also played a vital part, offering faculty and students a means not only of staying current in their fields, but of participating through their own research in what is increasingly becoming the global circulation of knowledge.

Among universities in developing countries, it was not as if academic journals ever came easily. The arrival of a new issue could at times represent a singular accomplishment, given the expense of overseas subscriptions in relation to local economies and currencies, as well as the uncertainties of mail service. Locally published journals faced their own set of problems. Many were typical scholarly journals published on a regular basis, but more than a few were marked by irregular publication schedules and titles that ceased to exist after a few issues. Still, research libraries in the developing world began to build journal collections in the hundreds, and even thousands, of titles during the 1960s and 1970s, only to have those collections decimated by subscription price increases,

currency fluctuations, and local economic troubles. Addis Ababa University in Ethiopia, for example, lost 70 percent of its 1,200 subscriptions in the late 1980s (Rosenberg 1997). Thiagarajan Viswanathan, director of the Indian National Scientific Documentation Center, reports that “India, which used to receive about 20,000 journals in 1983, now gets less than 11,000, and fewer copies of each,” and Autar S. Paintal, former director general of the Indian Council of Medical Research, paints an even grimmer picture by pointing out that “an Indian [researcher] is often unaware of the latest trends in science publishing [because] hardly 10 percent of our libraries get the top journals” (both quoted in Gibbs 1995, B13). The World Health Organization found that at the close of the twentieth century, more than half the research and higher-education institutions in the lowest-income countries simply had no current subscriptions to international journals (Aronson 2004).

With the transition to new publishing technologies over the last decade, the question that has arisen for those working in the Southern Hemisphere is whether the North “will continue to refuse to cooperate in the establishment of an equitable world information order,” as Colin Darch, an academic librarian in Cape Town, South Africa, bluntly puts it, “based on entrenched principles of full disclosure and free flow” (1998). Darch’s ideal of an equitable world information order, one that has moved beyond the colonial legacies of center and periphery in the geopolitics of knowledge, has everything to do with the goals of open access archives and journals, especially as greater access to the literature and to journal publishing can contribute to the research capacities of developing nations.

A United Nations report presented in Addis Ababa in 1969, for example, proposed that if the “vicious circle of underdevelopment” was to be overcome, an “indigenous scientific capability” needed to be fostered, which meant overcoming, among other things, “highly imperfect access to the body of world scientific knowledge” (quoted in Cooper et al. 1971, 107–109). More recently, the World Bank (2000) attributed the growth experienced by Asian economies in the 1990s to policies that “placed heavy emphasis on education and technology in order to close the knowledge gap with more advanced countries” (16). Avinash Persaud (2001), a State Street Bank analyst, has calculated the gap between the developed and developing world in number of scientists per capita to be

ten times as great as the considerable differences in incomes. When the United Nations Development Program (1999, 66) examined scientific and technology output, using the number of scientific papers published per unit of population as its measure, it found that the knowledge output of the Arab world, for example, was 2 percent of that of the industrialized countries, and that China and the Republic of Korea had both realized a tenfold increase in the number of papers since the 1980s.

In a recent copy of their joint annual report on educational indicators, UNESCO (the United Nations Educational, Scientific and Cultural Organization), IFS (the Institute for Statistics), OECD (the Organization for Economic Cooperation and Development), and WEIP (the World Economic Indicators Program) (2002) speak of “a historic convergence of globalization, knowledge-driven economies, human rights–based development and demographic trends” that fuels a renewed interest in education as a vehicle for human capital and economic growth (5). Although it may be hard at times to sort the human-rights concerns from the human-capital perspectives fostered by UNESCO and OECD respectively, the report makes it clear that improvements in educational attainment are closely associated in developing countries with economic well-being, with each additional year of schooling among the adult population corresponding to a 3.7 percent increase in economic growth rate (9). This attainment, however, is not simply a matter of improving basic literacy levels, but “depends critically on participation in and the successful completion of higher levels of education” (10). The report goes on to identify how educational inequities, particularly at the postsecondary level, appear to “reinforce” broader social inequalities (12). The encouraging news is, however, that the number of students attending postsecondary institutions in Africa grew by 20 percent annually over the last two decades of the twentieth century, even if those institutions are often poorly equipped to do the job they must do (Banya and Elu 2001, 1).<sup>1</sup>

1. With postsecondary education, the costs per student can be as much as sixteen times those for primary schooling, and up until the 1990s, the World Bank tended to treat postsecondary education in the developing world as an inefficient enterprise compared to sending students abroad (UNESCO, IFS, OECD, and WEIP 2003, 14). But that has changed with the World Bank’s recognition that higher education can foster knowledge and sensibility (as well as contribute to a global knowledge-based economy) that can lead to more democratic and resilient nations (Banya and Elu 2001, 1).

The need for developing countries to become a greater part of a new world information order has inspired a number of global initiatives by the private sector and aid agencies to build developing countries' technical infrastructure.<sup>2</sup> As a result, computers and connectivity are appearing, if only in very small numbers, in the research libraries and laboratories of universities in the developing world. In one United Nations Development Program (2002) project, the 5,600 students and staff of the Bangladesh Agricultural University were able, as part of a national wireless initiative focused on educational institutions, to shift from a single modem and an unreliable phone line to high-speed wireless connectivity linking them to the capital city of Dhaka, 100 kilometers away, and to the rest of the world. In India, Indira Gandhi National Open University is providing computer education courses to remote areas of India, while the Information and Library Network—which connects 150 university libraries, 50 postgraduate centers, and 200 research and development centers—is implementing library automation and database systems, with gateways to international research databases (Rao 2001). A corresponding development in the technological savvy of librarians also appears to be taking place in developing countries, judging by Lampang Manmart's (2001) study of Thailand, which elucidates how university degrees for librarians in that country are being recast as information

2. At this point, for example, the World Bank is devoting \$800 million to increasing the Internet connectivity of developing countries; one example is the World Bank Group's Global Development Learning Network Project, a \$3 million venture in Indonesia devoted to new communication and learning technologies for higher education. Vietnam has a \$100 million World Bank Higher Education Project aimed at "capacity building, institutional development, and computerization." These projects are described on the World Bank Group Web site (<http://web.worldbank.org>). Other programs for improving Internet access in developing countries include the Digital Opportunity Taskforce, the United Nations Development Program, the African Information Society Initiative, and the Global Information Infrastructure Commission. In addition, the U.S. government has been supporting a five-year, \$15 million Leland initiative to support Internet infrastructure in twenty-one African countries (Adeya and Oyelaran-Oyeyinka 2002, 31). Marine fiber cables now circle the African continent, with Internet connectivity having grown from two connected countries in 1994 to all African nations in 1999, although the distribution of that connectivity is still extremely sparse, especially in the interior.

science and information management programs, which are introducing a new generation of librarians to Internet technologies.

Despite limited access in most areas of Africa to a level of technical infrastructure that the West now takes for granted, it is clear that African access to e-mail has already made a significant difference in the circulation of research. In Zimbabwe, health workers are using e-mail to conduct searches on PubMed, the U.S. National Library of Medicine's online index to the life sciences, and then request articles to be scanned or downloaded. E-mail is also used to carry out research, as well as to circulate articles, for the Ethiopian Flora Project. E-mail has also become a means of getting the word out on the content of new issues of African journals, as well as assisting in the submission and review process (Teferra 1998).

University faculty in developing countries have not waited for their campuses to be wired to go online. In a study of computer use among faculty in Nigeria and Kenya, Catherine Nyaki Adeya and Banji Oyelaran-Oyeyinka (2002) found a few years ago that more than 90 percent of the 227 university faculty who responded to their survey were using e-mail and word-processing programs. The Kenyan faculty members reported that they had been doing so "for 5–10 years for an average of 2–4 hours a day" (43). In both countries, most of the faculty were covering their own Internet costs, in part because they found university systems too slow and congested for reliable use (49). Faculty in both countries (80 percent in Kenya and 58 percent in Nigeria) reported using the Internet for academic research: "While researchers devote a relatively small proportion of time to their own research, respondents still use the Internet to keep abreast of new research and developments in their areas of specialization" (50–51). Though noting that the "responding academics both in Kenya and Nigeria expressed the desire for greater interaction with their peers worldwide because they feel isolated due to poor access to the ICTs [information and communication technologies]," Adeya and Oyelaran-Oyeyinka conclude that enhanced infrastructure will not be as important, in the long term, as more active participation in research and the production of knowledge (51).

As connectivity in African universities (as well as those elsewhere in the world) slowly improves, it then falls to the academic research

community to ensure that the knowledge gap is further reduced through a ready ability to access online resources. It is time for researchers in the developed world to consider just how easily they can contribute to the research capacity of the developing world by moving to a more open approach to scholarly publishing. More than that, researchers everywhere only stand to benefit by the promise such increased access holds for the increased circulation of and participation in the critical work of their field.

Just what the access principle can mean in this context has been dramatically portrayed by Amartya Sen as nothing less than a matter of human freedom. This Nobel Prize–winning economist holds that progress on the road to development is based on reducing “various types of unreason that leave people with little choice and little opportunity of exercising their reasoned agency” (1999, xii). Sen speaks of the need for “a broader informational basis,” whether to increase a nation’s pursuit of justice or an individual’s exercise of reasoned agency (67).<sup>3</sup> The public’s “participatory capabilities,” he notes, which require “knowledge and educational skills,” need to be encouraged in everyone, including girls and women, who have not traditionally had the same opportunities as boys and men (18, 32). India’s continuing malnutrition problems, as well as its high illiteracy rates, require more effective use, in Sen’s estimation, of “communication and political participation—in short, fuller practice of democracy” (154).<sup>4</sup>

3. Sen has famously claimed that India has not suffered a substantial famine since democracy was established, as a result of this greater information openness and a free press. Sen acknowledges, however, that democratic India does not prevent millions of Indians from dying of malnutrition annually and has not yet been able to increase the national literacy rate above 60 percent. He remains concerned with an “elitist concentration on higher education” in India that operates at the expense of the primary and secondary schools (1999, 42).

4. A practical example of broader participatory capabilities, which Sen wishes to see developed, is found in the M. S. Swaminathan Research Foundation program for setting up value-added centers, often staffed by women, which gather and distribute information through a hybrid wired and wireless network, linking ten to twenty villages, helping the villagers check on prices, government entitlements for villages, health care information, and ocean weather conditions (Arunachalam 2002).

Given Sen's belief in the importance of building public capabilities, developing public reason, and inspiring a sense of freedom and choice, Indian universities do seem to have a critical role to play, in gathering data, testing new models, and positing new theories, within local and global contexts. Yet they cannot do this effectively if they are isolated from the work of the larger research community. Thus I am concerned that, for example, at Delhi University, one of India's finest research libraries, with over a million volumes, had been forced by the late 1990s to give up two-thirds of its subscriptions, with cuts felt particularly in the arts, in which 582 titles were cut down to 168 (Patel and Kumar 2001, 61). Although university budget allocations in India during that period certainly fluctuated, with years of increase as well as decline, the reductions in general funding to Indian universities were nowhere near as drastic as the unrelenting price increases that, combined with currency fluctuations, forced the cutting of journal titles.

At the Agricultural Sciences University in Bangalore, which I visited in 2003, nearly half the journal subscriptions had been canceled during the preceding decade, leaving it with somewhat fewer than 600 titles. That figure would have been much worse if the library had not had free online access to 150 journals, and if it had not been able to barter its way to another 150 titles in exchange for copies of its own journal, *Mysore Journal of Agricultural Sciences*. This mix of open access and bartered print copies exemplifies the sort of resourceful struggle that these universities are carrying on in an otherwise state of declining access to research.

In Africa, there is no less of a struggle underway to support the development of research capacities amid scarce access to the scholarly literature. The Development Policy Centre in Ibadan, Nigeria, for example, has become a magnet for scholars in the policy area, because funding from the World Bank, United Nations Development Program, and African Development Bank has enabled it to minimize its loss of journals, at least compared to other institutions in West Africa (Mabawonku 2001, 102). Still, the Centre's librarian, Iyabo Mabawonku, notes that visitors are more likely to browse the Internet in search of the resources they need, rather than consult the library's books and print journals, even though they have to pay for this browsing. As it is, the Centre's print journal collection is anything but sufficient, given that, as Mabawonku

notes, the overseas vendors of the print journals to which the Centre subscribes “have never supplied more than 60 percent of the issues published each year,” while her ongoing letters of complaint are “never acknowledged” (105). One source of hope for Mabawonku is that libraries could begin to offer more publishing and editorial functions and become directly involved in the circulation of locally produced research.

Kenya provides a similar example of difficult realities and continuing hope. The devaluation of the Kenyan currency during the latter half of the 1990s cost the libraries there about 30 percent of their purchasing power for foreign journals (Mutula 2001, 156). At Kenyatta University, the library’s serials collection was down by 2003 to one “core” print journal per department (Muthayan and Muinde 2003). On visiting Nairobi University Library in 2003, I walked among seven well-crafted wooden racks for displaying current periodicals, all of which stood empty, with not a journal on display or a back issue stored beneath the hinged racks. When I asked about the empty racks, the librarian said that the current issues of the few subscriptions that they still had were eagerly being read by the students. However, on top of the empty display racks were signs notifying patrons that the Internet had recently “resumed” in the library and should be used for accessing journals. In a small lab with a handful of computers in a glass-enclosed corner of the library, students had suddenly acquired access to 10,000 electronic journals and a much greater number of abstracts through the agreements that had recently been negotiated by the International Network for the Availability of Scientific Publications.<sup>5</sup> INASP’s initial three-year agreement with EBSCO (a major journal subscription service), Springer, Oxford University Press, Blackwell, and others provides for a 90–98 per-

5. The Web site for the International Network for the Availability of Scientific Publications is at <http://www.inasp.info>. INASP’s Programme for the Enhancement of Research Information has four components, with the delivery of information, through e-journal contracts with publishers being the first of these, followed by disseminating results of national and regional research, enhancing computer skills, and strengthening local publishing (Smart 2003). The Electronic Publishing Trust for Development (EPT) is also committed to supporting publishing efforts in developing countries, and eIFL.net, a project of the Soros Foundation, has been active in negotiating licenses for electronic access on behalf of libraries in transition and developing countries.

cent discount on electronic access to journals and covers over a hundred developing nations.<sup>6</sup> INASP, which currently covers these minimal access fees through its donors, plans to have this discount agreement negotiated by the individual developing countries in the future.

Another promising development in Kenya was the launch in 1991 of the African Virtual University (AVU) in Nairobi. Utilizing satellite technologies, AVU was able to serve students through thirty-four sites (with over 1,000 computers) in nineteen African countries during its “proof of concept” stage, with courses in technology, engineering, business, and the sciences (“sourced from leading universities in North America and Europe,” according to the AVU Web site).<sup>7</sup> Having moved out of its pilot stage as a World Bank project, this independent intergovernment organization offers access to 1,000 online journals through its digital library and has helped institutions across Africa to set up AVU learning centers with high-speed connectivity to the Internet. The African Virtual University’s library, according to Nancy Kamau, senior librarian at the Kenya Medical Research Institute, is devoted to “breaking through the information access barriers,” as this “global platform” also seeks to make African content available to the world, while improving African access to resources (Kamau 2001). It understandably troubles African scholars to see companies, as Kamau puts it, “that market information products from the developed world . . . fail to recognize the potential that local content has as a part of a global knowledge.”

The first major boon in open access for developing countries took place in 2002, when the World Health Organization (WHO) convinced the leading scientific publishing houses to provide these nations with free access to their biomedical research journals. The resulting Health Inter-  
Network Access to Research Initiative represents a partnership between WHO and (currently) forty-seven publishers of biomedical and health care journals (Aronson 2004). Institutions in the sixty-eight countries

6. The 90–98 percent discount figure is based on publishers’ costs for managing access to their journals by the participating nations, a percentage that I take as further evidence of electronic publishing’s surplus distribution capacity (Smart 2003).

7. The African Virtual University Web site can be accessed at <<http://www.avu.org>>.

with a per capita GNP of less than \$1,000 (according to World Bank figures from 1999) now have access to over 2,300 journals.<sup>8</sup> After the first year of HINARI's operation (2002), 438 institutions had signed up from fifty-six countries ("Health Interchange" 2003). Whether the INASP and WHO initiatives are read cynically or optimistically—whether as a public-relations flip for publishers or the moral arm twisting of international agencies—they represent a ray of light in what can otherwise be portrayed as the gloom of the irresistible and heartless forces of economic globalization. The HINARI model has since been extended to agriculture, with the Access to Global Online Research in Agriculture (AGORA) project providing open access for institutions in fifty-one of the poorest nations "to more than 500 key journals in food, nutrition, agriculture" and "related biological, environmental and social sciences" to a similar set of impoverished nations, according to the project's Web site,<sup>9</sup> with similar open access initiatives under discussion in fisheries, food technologies, and environmental protection.

"You cannot do science without information" was how Barbara Aronson described the basis of the HINARI agreement, which in her capacity as a WHO librarian she helped put together. Researchers in some of the world's poorest countries, she pointed out, now have, as a result of HINARI, information equivalent to "a top-flight U.S. library" (quoted in Peterson 2001). Think of the difference that access to 2,000 life science journals will make to the University of Zimbabwe, for example, which has seen its journal collection in this area dwindle from a high of 600 titles to 170 because of escalating subscription costs over the last two decades (Nagourney 2001). Faculty there had reported in a study conducted in the 1990s that they were spending half their limited travel opportunities each year visiting libraries and bookstores, while others were successfully using personal contacts to obtain recent work as well as writing to authors for reprints (Rosenberg 1997, 1:53). The recently

8. HINARI also includes an additional forty-two countries with per capita GNPs of between \$1,000 and \$3,000, which pay \$1,000 annually for national access, with the money going toward the training of librarians in the use of the HINARI catalogue and journals.

9. The AGORA Web site's URL is <http://www.aginternetwork.org/en/>.

acquired access, through HINARI, to biomedical and agricultural journals amounts to a small triumph for the public sector of the global knowledge economy.

The other side of this access coin, however, concerns the publishing activities of researchers working in developing nations. Not so long ago, Diana Rosenberg, an expert in African libraries and scholarly publishing, concluded that it will take “a quantum leap in African publishing and distribution” to “reverse attitudes to local and African published material” (1997, 1:20). Among the many examples she offers is that of the University of the Cape Coast Press, which at the time of her study had several books in preparation, with pages camera-ready for printing, that could not go to press for want of funding (1997, 1:20). The *African Periodicals Exhibit Catalogue*'s list of scholarly journals went from 135 titles in twenty-two countries for 1997 to 70 titles from sixteen countries two years later, whereas earlier reports had identified up to 400 journals from forty-eight countries (Adebowale 2001, 30). During the 1990s, nine of the nineteen journals that had started publication in the 1960s in Nigeria met their demise (Zezeza 1998, 23). The cost of the raw materials for publishing, including paper and printing-machinery parts, had “more than doubled in the past five years,” Jacob Jaygbay noted in 1998, with the overall result that it was just plain difficult for an African library to acquire African journals (66). Still, when it comes to the introduction of new technologies into publishing, Jaygbay, for one, remains wary, given many economic and cultural aspects associated with such technologies that need to be considered in light of the African context.

A further challenge for journal publishing in Africa has been the failure of major international indexing or journal supply services to include journals published there. Fortunately, the National Inquiry Services Centre in South Africa, headed by Margaret Crampton, has begun to address the indexing issue with its Global Information for Africa program, which issues a variety of bibliographic databases “for Africa, about Africa and by Africans” (NISC 2005). Additionally, Bioline International provides a portal, with indexing, pay-per-view, and open access services, for over thirty biology journals from developing nations, including a number from Africa. As Leslie Chan, associate director of Bioline

International, explains it: “The goal is to improve the visibility, accessibility and subsequent impact of research that would otherwise be ‘lost’ because few research libraries subscribe to developing countries’ journals despite their importance. . . . Our experience suggests that open access not only enables free flow of ideas, it ensures more equitable scientific developments and their applications to social needs, including those of the developing countries” (2003).

On a larger scale, African Journals Online (AJOL), a site maintained by INASP, now offers the tables of contents and abstracts for over 200 African journals, accompanied by a print and e-mail document delivery service. The AJOL program also conducts workshops and provides other forms of support aimed at introducing African journals to ways of managing and publishing their content online (using systems originally developed by the Public Knowledge Project, as discussed in chapter 5), as a means of creating a greater global presence for this work and establishing a local and sustainable journal culture (Smart 2003).

Paul Tiyambe Zeleza, Director of African Studies at the University of Illinois at Urbana-Champaign, sees the need for indigenous publishing and local research agendas, out of a concern over how readily African university faculty “import appropriate packages of ‘universal’ theory and, at best, export empirical data,” even as African universities are “increasingly forced to become service parks for private capital” (1998, 17). The lack of access leads, in Zeleza’s view, to a lack of intellectual accountability in the study of Africa: “Today, Northern scholars writing on African countries do not need to worry about what their African colleagues think or say, especially if the latter are based on the Continent, because they are unlikely to review their work” (21). He calls for “mutually beneficial networks” that reinforce “the productive capacities” of all involved (21). Zeleza, above all, wants African researchers and scholars to be able to freely assert their intellectual autonomy, something they can achieve, he believes, only “by publishing, without apology in journals they control; by reading and citing each other, by demonstrating a greater faith in their own understanding of their complex and fast-changing societies—for no one else will do that for them” (1996, 300). This is precisely the promise of open access publishing systems, which

can be installed and controlled locally, while offering a global presence through sophisticated indexing schemes (presented in more detail in chapter 12).

The challenges facing African scholars are little different from those experienced in Latin America, as noted by Ana María Cetto and Octavio Alonso-Gamboa, two information scientists working in Mexico: “We still look to the North to find out what we should be doing and how well we are performing; and we adopt and apply measuring standards defined abroad, regardless of whether they correctly measure performance according to our objectives, needs and conditions” (1998, 116). They point out that it is much easier, if far more costly, for Latin American scholars to get hold of North American or European journals than to obtain journals from another Latin American country, forcing Latin American universities seeking journals from the region to go through a “North American or European distributor so as to ensure as much as possible a safe and regular delivery” (120). They also tell of a librarian in a European university acknowledging that her library was unlikely even to allocate the space needed to house a print edition of a Latin American journal, even if it arrived at the library at no cost (120).<sup>10</sup>

When it comes to what these issues of access to the literature and a right to participate in it mean for someone working in a university in a developing nation, one can do no better than turn to A. Suresh Canagarajah’s (2002) account of teaching literature at the University of Jaffna in Sri Lanka. Although the focus in most discussions of access to scholarly literature is on the scientific literature, Canagarajah reminds us that the humanities are no less vital a scholarly aspect of the academic community and that issues involving access to research in humanities fields are no less in need of redressing. He cites examples of stunningly insensitive peer reviews of articles that he and his colleagues submitted to Western journals, which included near-impossible demands made of them to be on top of the current literature. He records just how little time faculty

10. The open access response to this situation is found in the Scientific Electronic Library Online <<http://www.scielo.org>>, a trilingual host for Iberian and Latin American journals with approximately eighty titles.

had for scholarly writing (given the very large teaching loads imposed by the university), as well as the paucity of incentives for conducting research and writing and resources for doing so (shortage of typewriters, paper, and typewriter ribbons, let alone computers).<sup>11</sup> Meanwhile, local magazines and newspapers welcomed contributions from university faculty, which made for much greater public engagement in their communities but drew them away from research activities that scholarly publishing opportunities might have fostered.

While Canagarajah makes little reference to publishing technologies and is duly cautious about the Internet, he turns repeatedly to issues and principles of *access*. For example, he calls for changes to “the relationship in the publication networks so that we can reconstruct knowledge—and presumably conduct international relations—in more egalitarian and enriching terms” (2002, 305). He reminds readers that the initial challenge faced by faculty members who wish to engage in scholarly research is getting a feel for the context of current scholarship. He describes how faculty members might come across perhaps a single, outdated issue of a journal, brought back by a colleague returning from abroad, or happen upon a notice of an exciting new journal in their field without being able to see it. In the most mundane details of access, Canagarajah makes poignant how the basic rights of participation—no less than “a rhetorical knowledge of scholarly publications”—are taken for granted by scholars who exist at the centers of publishing activity, even as they assume that these publications represent an open and free discussion of ideas, while in reality the limits to the circulation of the journals defines an intellectual periphery in which participation in this circulation is almost impossible (207).

Canagarajah uses this postcolonial metaphor of *center* and *periphery*, which he sees persisting in current knowledge production, to bring home the point that real change will take place only if “periphery scholars in-

11. Similarly, in the case of Kenya, according to Adeya and Oyelaran-Oyeyinka (2002), “lecturers at the public universities have complained that their research potential is stifled due to excessive teaching hours, outdated technology or lack of modern technology and insufficient access to scholarly materials and publications. Yet, most are keen to develop research in their disciplines in order to further scholarship worldwide” (27).

filtrate these publishing channels [of the center]" (2002, 29).<sup>12</sup> Yet he is no less concerned about creating space within these channels for local publishing efforts; he uses the Shri A. M. M. Murugappa Chettiar Research Center in Chennai, India, as an example: "Lacking the means to disseminate their own knowledge widely through print, peripheral communities have to be satisfied with having their research and scholarship receive limited hearing" (242). This, in turn, leads those working in the center "to assume that no knowledge exists on certain peripheral realities," so that they "go on publishing work based on limited data" (242). The result? "The journals thereby disseminate partisan knowledge globally" (43).

For Canagarajah, the alternative is to create a place for the distinct sensibilities of different academic cultures—"a plurality of rhetorics"—while avoiding a headlong rush into a one-voice, one-style, one-world sequence of cultural globalization (2002, 94). Using the impact that the Swedish journal *Lanka* has had on his colleagues in Sri Lanka, Canagarajah speaks of the sheer motivational power of being able to turn to a body of work that speaks directly—if nonetheless published at a distance—to the experience of peripheral scholars. Canagarajah also spells out the benefits for the intellectual center of the increased global dimension of scholarly activity, noting that "an engagement with local knowledge from periphery contexts can help enrich, expand, and reconstruct mainstream discourses and knowledge" (303).

12. For example, one study shows that of research articles concerning the forty-eight least developed countries in 1999–2000, only 30 percent had coauthors from local research institutes in those countries (Dahdouh-Guebas et al. 2003, 329). The authors of articles on those least-developed countries expressed confidence, when interviewed, in the "reliability" of local researchers and in the contribution of their own work to "development cooperation"; yet Dahdouh-Guebas et al. feel compelled to conclude that a form of "safari research" is still commonly being practiced among researchers conducting their studies in the developing world (336). Benjamin Acosta-Cazares and his colleagues (2000) first used "safari research" in a paper that calculated that, although 25 percent of the world's scientists live in developing countries, a scientist from the developed world is five times as likely to submit an article to, and 2.1 times as likely to have it accepted in the *British Medical Journal* than a scientist from a developing country. Additionally, scientists in developing nations are poorly represented on the editorial boards of such journals as *Lancet* and *Nature* (although they hold six of thirty-four positions with the *British Medical Journal*).

From my perspective, open source online journal management and publishing systems offer the potential of locally controlled scholarly publishing efforts on the Web utilizing the scant but emerging technical infrastructure that is gradually taking root in universities in Sri Lanka and elsewhere. This would allow a far more distributed journal culture to spread through the academic community, against an otherwise centralized model. Online journal systems can, for example, support far more extensive collaboration among international editorial teams—and such collaboration is what Canagarajah recommends—in further overcoming the lingering center-periphery divide (2002, 273–274).<sup>13</sup> The editorial gatekeepers of scholarship no longer need reside at the center, which undermines the very idea of the center. The digital divide will undoubtedly persist, but there are grounds for hoping that new information technologies can be used creatively to overcome aspects of what might be cast as the *print divide* that has hindered the full participation of the global academic community in research and scholarship.<sup>14</sup>

As Michael Hardt and Antonio Negri warn in *Empire*, it is nearly impossible now to step outside of what they awkwardly term “the informational colonization of being” perpetuated by a handful of communication industries that “not only organize production on a new scale and impose a new structure adequate to global space, but also makes its jus-

13. For example, according to its Web site (<http://pkp.ubc.ca/pocol>), *Postcolonial Text*, one of the first to use the Public Knowledge Project’s Open Journal Systems, has its initial team of editors, assembled in 2003, distributed among the West Indies, South Africa, India, Sri Lanka, Australia, and Canada, with each able to oversee the editorial process from a Web browser.

14. In the sciences, at least, one promising sign of reduced influence of the center-periphery model is the very growth in coauthorship between scholars from developed and developing nations (Arunachalam and Doss 2000). This international collaborative strategy is particularly common with authors working in countries with a very weak presence in the ISI Web of Science, as with Indonesia’s 266 papers, of which 88 percent had international collaboration (622). Although Arunachalam and Doss attribute the overall growth in international coauthorship to increased airline flights and international phone calls, it might also seem that enabling researchers in developing countries to have greater access to the research literature would only add to their capacity for this type of collaborative research.

tification immanent” (2000, 33–34). This new media empire, with its parallel in scholarly publishing’s own forms of corporate concentration, only increases the importance of opening up alternative communication channels for scholarly inquiry in the name of open access. How else can the two-way knowledge gap suffered by both periphery and center be bridged? How else can the global scale of scholarly activity contribute all that it might to the democratic and public possibilities of a public sphere that is otherwise in danger of being overwhelmed by the proprietary interests of the communication industries?<sup>15</sup>

What this means is that scholars everywhere need to question their assumptions about what constitutes an adequate circulation of their and others’ work. As scholars work against the partiality of knowledge, in the double sense of its being both biased and incomplete, they need to recognize that the best check on that partiality is to extend the global basis on which knowledge circulates, not only among university researchers, but among those working in related areas of health, education, welfare, and justice to draw on a few social science examples. Practically speaking, scholars and researchers need only ensure that the journals with which they are associated have a policy of offering open access at least to developing countries and that they upload published and unpublished work to open access e-print archives, when that work is not otherwise freely available online. It seems little enough to ask.

Yet there are undoubtedly risks to opening local cultures further to globalizing influences through their universities. Questions remain about whether the technology can reduce the information inequities and whether a balance can be found between global and local interests. Can technology indeed help rewire not only older patterns in the circulation of knowledge, but the spread of education and the growth of research capacities? Innovations in open access publishing are taking place

15. For Hardt and Negri (2000), what is at issue is the “right to reappropriation,” and in particular a “*reappropriation of knowledge*” that, as a “political demand of the multitude,” is all about “having free access to and control over knowledge, information, communication, and affects,” as it is “articulated with the powers of science and social knowledge through cooperation” (404; 404, emphasis in original; 406; 407; 410).

against the chilling historical backdrop of earlier efforts at instilling universal education and global knowledge systems, when the West placed educating the native at the heart of imperialism's moral economy (Willinsky 1998). The way forward with new scholarly publishing models is not without dangers, but the academic community has reason enough to pursue this principle of increased access to the knowledge it produces and to do so consciously against the backdrop of this ever-present past.