So far and yet so near?*

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Developments in computer and communication technologies over the past ten years aptly support the use of the term *global village* to describe the present worldwide provision and distribution of information. These technologies are increasingly being employed in Africa, but their presence is not widespread and evenly distributed. Librarians in Africa are establishing the basic tools and organizational structures to enable them to work together; however, a fundamental issue of attaching sufficient importance to the provision of information in the institutional and national priorities remains to be solved.

The choice of the theme “Health Information for the Global Village” for this congress is a logical expression of the concern that health sciences librarians have shown over the years in sharing resources. Cooperation between libraries, out of which grew networking, is as old as libraries themselves. Developments in computer and communication technologies over the past ten years aptly support the use of the term *global village* to describe the present worldwide provision and distribution of information.

In an African setting, a *village* connotes a community in which individual members are well known to each other. People can easily move from one end of the village to another. Individual interests and actions are easy to identify, and these interests merge into the general welfare of the community. In essence, the African village is a small community where human interactions are easy and swift. There are few impediments in communication, except when individuals choose to be at loggerheads and therefore refuse to communicate.

An effective information network must include libraries and information centers in various stages of development. There must be a core of trained personnel to direct and manage a service and suitable and adequate technologies to bring together resources and users. I will start with a cursory review of the health sector in Africa, drawing attention to factors that promote or impede library and information growth and the state of the technology in the region and conclude with thoughts on what needs to be done for sub-Saharan Africa to belong to the “global village.”

There are wide disparities in the availability of welfare facilities, including health, at national, regional, and international levels. Such disparities are increasing over time. In terms of partial distribution, both developed and developing countries face problems resulting from wide imbalances in the provision of welfare facilities. The disturbing aspect of conditions in Africa is the seeming inability to improve upon the existing inequality over time. Within most African countries, access to personal health care tends to be very unequal across administrative districts and between rural and urban areas. The health care systems inherited by these countries at independence were equipped to provide personal care to only a small fraction of the population. Progress since independence has varied greatly from country to country. When access to personal care, for instance, is defined as the patient being no more than an hour away from a health care facility by local means of transport, only 11% of the rural population in Côte d’Ivoire, 15% in Somalia, 25% in Rwanda, and 30% in Niger and Nigeria have such access. Among the thirty-three states of Nigeria, the number of health facilities ranges from one per 200 people in the Lagos state to one per 129,000 in the Benue state. Three-fourths of Ni-

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gerian private and public health facilities are located in urban areas, which contain only 30% of the population.

In Kenya, the average is one doctor per 500 people in Nairobi, compared with one per 160,000 people in the rural Turkana district. The geographic imbalance in the various countries is accompanied by an imbalance in public spending. Major urban hospitals often receive half or more of the public funds for health care. In the mid-1980s, for example, the major hospitals' share of public recurrent health expenditures was 74% in Lesotho, 70% in Somalia, 66% in Burundi, 54% in Zimbabwe, and 49% in Botswana. In addition, these major hospitals often employ the largest proportion of highly trained health personnel. In Kenya, for example, 60% of all physicians and 80% of all nurses are assigned to such hospitals [1].

In general, the national health systems in Africa consist of three types of hospital facilities: private, mission (belonging to the various religious groups), and government. The government, represented by a Ministry of Health, has a hierarchy of health care institutions of which the rural health center or post forms the base of the pyramid. The World Health Organization (WHO) regional office for Africa records that there are 22,554 health centers and 19,328 health posts in the region [2]. The health centers or posts are staffed by medical assistants, midwives, and environmental health workers, and they are expected to provide the needed preventive and primary health care. Next in the hierarchy come the district hospitals, which provide both inpatient and outpatient services for the surrounding population and also serve as referral hospitals for the health centers or posts. There are 2,206 district hospitals in the forty-six African countries with a total population of approximately 500 million within the WHO Africa region. The existing district hospitals form only 53.8% of the 4,099 health districts that these countries have declared. At the apex of the hierarchy might be regional hospitals, which serve as referral hospitals to the district hospitals. One or two of these hospitals may serve as a teaching hospital in countries with medical schools. A noticeable feature of this administrative set-up is that bureaucratic authority is weakest and spending is lowest at the lower levels of the hierarchy.

Many of the medical schools in Africa are new, having been established within the past twenty years. There were eleven medical schools in 1955, of which five were in South Africa. The number grew to twenty-six in 1970 and sixty in 1994 to serve a population of 500 million. The training of paramedical personnel such as nurses, laboratory technicians, radiographers, physiotherapists, and dental technicians varies from country to country. Although in some countries, training takes place in tertiary institutions, in other countries, this training is under the umbrella of the Ministry of Health. In both the medical schools and the paramedical institutions, libraries have not been emphasized nor have most of the schools had the time or the resources to establish worthwhile collections.

There is a general lack of integration of library and information services in the development of health programs. In a survey of medical schools in Africa carried out in 1974 to highlight the activities, problems, and aspirations of these schools, not a single reference was made to the central role of the library in the education of future doctors. The lack of integration therefore can be traced to failure by policy planners to appreciate the positive role of information in realizing better health care.

ELECTRONIC NETWORKS

Essential ingredients in a modern network are computers and telecommunication facilities. Unlike twenty or even ten years ago, when innumerable problems were identified with the use of computers in Africa, the situation seems to have changed tremendously. This is due partly to improvements in the technology and partly out of the realization that Africa needs to adopt this technology or forever be left behind. Electronic networking is transforming communication and the conduct of research around the world. Though it is being introduced slowly into Africa, there is evidence of a growing trend arising mainly from donor support and the efforts of dedicated individuals. One obstacle in the rapid growth of the facility is the general absence of extensive communication facilities on the continent. Africa has 2% of the world's main telephone lines and 12% of its population. Distribution of the facilities varies widely from country to country. In most countries, the post and telegraph department (P&T), a governmental or semi-governmental organization, has a monopoly over the facilities, though private mobile cellular radio telephones are entering the market.

In Ghana, as in most countries, a major constraint on implementation of a national decentralization program lies in the ability of the districts to communicate among themselves, the regional authority, and the seat of government. There are approximately 50,000 P&T lines plus approximately 4,000 mobile cellular subscribers in the country. The estimated demand is approximately 300,000. Thirty-seven out of the 110 administrative districts have telephone exchange facilities. There are only thirty-five pay phones in the entire country for international calls, of which thirty-two are located in the capital in Accra. The present national telephone density is only three telephones per 1,000 people. The density in the northern half of the country is as low as three telephones per 5,000 people. The recommended average for sub-Saharan Africa is four, with an International Telecommuni-
cations Union target of ten telephones per 1,000 people for African countries.

There is an ongoing project that will increase the P&T lines to 80,000 by the end of 1995 and that would increase the density to approximately five telephones per 1,000 people. Meanwhile, there are plans to improve the situation generally on the continent. It has been announced that AT&T is seeking investors to help encircle Africa with a 33,600-kilometer fiber-optic cable. The cable would have landing points in forty-one African countries. AT&T expects to secure agreements for funds for the project by the end of 1995 and expects to have laid the underwater cable by the end of 1999.

Despite the poor communication facilities, electronic networks exist in thirty countries on the continent. Most of these networks have their origins in either Europe or the United States and are part of international efforts. This development varies from country to country and region to region. Although the East and southern Africa regions are better served both within the countries and in the region, the position is poor in central and western Africa. A large country like Nigeria, covering a vast span of land, still lacks an appreciable intracountry network.

The predominant networks that attempt to cover most regions are the Pan African Development Information System (PADISNET), HealthNET, Réseau Intertropical d’Ordinateurs (RIONET), and the Regional Informatics Network for Africa (RINAF).

PADISNET is an electronic network established in 1991 as part of the PADIS network. It is based at the Economic Commission for Africa office in Addis Ababa, Ethiopia, with the goal of providing service to the commission’s member countries.

HealthNET is specifically intended to provide affordable electronic communication to health professionals in developing countries. The network is managed by Satellife, a nonprofit corporation based in Cambridge, Massachusetts. Originally, HealthNET consisted of national nodes linked to each other and to Internet by radio transmission through a low-earth orbit satellite. Now most HealthNET stations transmit messages once or twice a day using high-speed modems operating over regular long-distance telephone lines. HealthNET is responsible for a good part of the existing network on the continent. There are installations in sixteen countries in Africa, with each of them building its own national network. The most successful national network is in Zambia, where approximately 100 points connect to the national node.

RIONET is an international electronic network set up by the French Institute of Scientific Research for Development and Cooperation in Africa. This worldwide network has connections to ten French-speaking African countries: Burkina Fasso, Cameroun, Congo, Côte d’Ivoire, Madagascar, Mali, Mauritius, Niger, Senegal, and Togo. Internet connectivity is provided by the RIO hub in Montpellier, France. There are more than 450 users in Africa who handle more than 10,000 messages per month.

RINAF was conceived by the Inter-Governmental Informatics Program of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to promote networking between academic and research institutions in Africa. The aim is to support network nodes and facilitate their eventual upgrading to full Internet status; nodes are being activated in seven countries.

There are other regional and national networks that are providing effective and useful services. UNINET-ZA, a South Africa–based network, promotes networking among academic and research computers in southern Africa. It provides a focal point for the many individual efforts in the region. It operates a gateway through which Fido and UUCP nodes in the region exchange international mail. Currently, there are daily connections to the following nine countries: Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Zambia, and Zimbabwe. UNZANET, based in the University of Zambia, demonstrates how electronic networking can be achieved from humble beginnings when spearheaded by dedicated enthusiasts. The national network, which was established in September 1991, had 141 active points as of 1993, a little more than 2,000 calls to the host per month, and approximately twenty-one megabytes of traffic flow per month.

The evidence is that e-mail capability does exist in Africa. Approximately thirty countries can send and receive electronic messages. Some of these countries have more than one system. The regional distribution, however, is not even. West Africa is significantly less developed. With the exception of RIONET, which links the French-speaking countries, networks are virtually nonexistent. Internet nodes exist only in Egypt, Tunisia, South Africa, and, recently, Ghana. In the absence of Internet, there is not much interactive communication. This affects one of the important services that a library could offer through electronic communication: online searches.

In the presence of electronic links, librarians will now be looking for both interactive and noninteractive searching on networks at low cost. They will look for a software that combines e-mail capability with automatic keyword searching so that one could send a search request as a message and receive a reply. There are attempts to solve this problem. A new software called Batch Internet National Library of Medicine Information System (BITNIS), developed at the University of Chile and being implemented in collaboration with the National Library of Medicine (NLM) in Washington, D.C., addresses this issue. To perform a search, a searcher uses BITNIS software in
combination with NLM’s GRATEFUL MED to formulate the search offline using Medical Subject Headings (MeSH) terms. When the search strategy is evolved, it is saved and sent by e-mail to the BITNIS gateway at NLM. The actual search is performed by a high-speed computer and the results returned in an electronic mail message to the user. BITNIS is being tested in three pilot sites in Kenya, Cameroun, and Zambia.

THE LIBRARIAN IN A NETWORK ENVIRONMENT

The general outcome of networking is that the library has ceased to be considered a collection point. It is now perceived as an access point. The modern library has become a switching center that connects users to information that may be located a few meters away or thousands of miles across the oceans. The librarian in Africa has practiced library cooperation, sharing meager resources with other local colleagues, but has at the same time depended on the goodwill and assistance of colleagues outside the continent. Librarians have not been seriously engaged in the established formal structures of a network.

There is a fundamental difference in the environment for the practice of networking in developed and developing countries [3]. In the developed world, networking has become an instrument to achieve better and cost-effective use of all resources. In Africa, networking is at best a concept, a philosophy to be used to improve library and information services. Although in the developed world, networking is a way of maximizing and sustaining existing facilities, it involves the creation of a whole new structure and service in a developing world.

The librarian in such circumstance becomes a leader, a planner, and an implementor. Admittedly, these are functions to be performed by all librarians. The peculiar circumstances of librarians in Africa thrust upon them the task of evolving a network out of a very basic infrastructure. They have also the primary (and daunting) duty of advocating that information services be integrated into the national health system.

The early health sciences librarianship literature in the continent had looked to heads of health institutions for leadership in bringing about change. This has not happened. It is therefore necessary at this time, when the concept of information is changing, for the librarian who is better informed to take up the leadership role. This role requires initiatives to establish information as an essential supportive element in health care. It will require the librarian to write memoranda justifying recommendations being made or proposals to national and foreign agencies for financial support. These papers should contain well-argued budget and program proposals that clearly outline needs for staff, equipment, and other resources to achieve the aim of the proposal.

Networking requires that members share in planning and developing programs for mutual benefit. This implies identifying and articulating needs and identifying and cultivating institutions and individuals that share the philosophy implied in networking. Countries need to commit human and capital resources to computers and other technologies. Such commitment must be based on knowledge of the technologies, prudent planning, and an understanding of developments in the field. In brief, the librarian in a networked environment is expected to develop more administrative and planning skills than have hitherto been required.

Two examples illustrate how these observations affect library practice on the continent. There is a gradual shift in the approach to library service. The two most pressing issues of libraries in Africa are document identification and document delivery, and in the absence of good distribution of libraries, librarians are moving away from institution-based services to outreach services to users in deprived areas. A centralized approach to providing literature is being adopted in order to maximize existing limited resources. Libraries in Ghana, Nigeria, Tanzania, Zambia, and Zimbabwe are using CD-ROM technology to create local publications based on MEDLINE citations and abstracts that are a profile of each country’s major health issues [4–5]. These publications are distributed to all medical practitioners in a country. The Health Foundation of New York supports the effort in the first four countries, and a U.S./Zimbabwe foundation, the J. F. Kapnek Charitable Trust, funds the Zimbabwe publication. The important point is that the initiative for the service came from librarians.

African health sciences librarians have embarked on a decentralized cooperative effort to identify and establish access to publications arising out of the research efforts of the continent in the form of an African Index Medicus [6]. It has long been realized that useful information from African researchers is overlooked as few African health and biomedical journals are indexed in the world’s leading bibliographic sources. The production of the African Index Medicus is an example of networking at many levels. Data entry is carried out at a national level, and country files are merged at a central point to produce the regional index. The planning, execution, and funding of the project has been a partnership between WHO; the Association of Health Information and Libraries in Africa, a professional association; and the Health Foundation. Three issues of the publication have come out since 1993, and it is gratifying to know that it is now available on an experimental basis through Internet via the WHO Gopher.
CONCLUSION

Librarians in Africa accept that they cannot continue to work in isolation. They are therefore establishing the basic tools and organizational structures to enable them to work as a team. Effort is being put into the establishment of national databases. Compatibility is assured by the general adoption of UNESCO's CDS/ISIS software. The new information technologies such as CD-ROM and electronic communications are being introduced, and this affects the management and operation of libraries. Librarians must train staff and users to be successful change agents in the community.

The African economy is not growing. There is less money to run institutions, and it is difficult to sustain existing infrastructures. Most of the CD-ROM stations and the electronic communications set-ups have been donated from the developed world. One cannot depend on aid to sustain and expand these facilities. The quality of telephone lines may improve, but the density per population will continue to be low for some time.

Campuswide CD-ROM stations and e-mail points are not likely to be common features very soon. The librarian faces a possible problem of having two types of users in one institution. One type will be well informed because it has access to sources, the other deprived of information because its organizations cannot afford the basic tools. The librarian must evolve a way of disseminating information to users deprived of the basic equipment.

Perhaps the real issue is the old problem of not attaching much importance to information in institutional and national priorities in Africa. Modern technology has brought information so near to the doorstep of Africa. Unless there is a general appreciation of this development, Africa could be far away from realizing its potential. The African librarian has a duty to ensure that information users in the continent become members of the "global village."

REFERENCES


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