Does Information Technology Increase the Division Between Rich and Poor?

Dennis Shaw
University of Oxford
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Dennis Shaw
Radcliffe Science Library, University of Oxford
Oxford, United Kingdom

INTRODUCTION

The division between rich and poor countries manifests itself in a variety of ways. With regard to libraries and information services, it is usually illustrated by the paucity of funds to acquire current monographs and periodicals. The Third World Academy of Sciences has initiated the latest effort to reduce the literature shortage in the libraries of universities and colleges. It is not yet known how successful this initiative has been. The theme of this paper is the extent to which the development of the new information technologies has affected this division between well-resourced and poorly-resourced libraries. The data presented here are taken mainly from the author's own experience over a five year period 1986-90, with the addition of some observations drawn from two joint IATUL/IFLA programs.

In 1986, when we started the new format for our journal (IATUL Quarterly), contributors were invited to submit their papers in machine-readable text on diskette. However, in spite of the fact that many contributions have been composed on a word-processor, the majority of submissions still come in hard-copy and rarely have we received an accompanying diskette containing the text file.

Our Secretary [1] has said on more than one occasion that we, as directors of technological university libraries, should play a leading role in adapting to these tools. They are often called "new tools" but we can hardly claim that now. The first word-processor package for a micro-computer was released in 1978 [2] and the first electronic mail messages were being transmitted between universities in North America in 1983 and in Europe soon after.[3,4]

USE OF ELECTRONIC MAIL

In 1988 an invitation was published, in our journal IATUL Quarterly, to all IATUL members to send a message by electronic mail to me in Oxford via their home-country network.[5] One, and only one, member did so successfully at the time. From this experiment we can draw the following conclusion: either, that all IATUL members had at that time electronic mail - but only one of you read IATUL Quarterly, OR, that all IATUL members read IATUL Quarterly - but only one of you had electronic mail, (OR possibly some intermediate inference). Reassuringly, later experience has shown that the situation has improved considerably. Even so, many of our members in Europe, North America and the Far East are not yet using e-mail on a regular basis.

ONLINE SEARCHING AND CD-ROMS

It was common knowledge by 1980 that UK libraries were using online searching techniques extensively and later on, in the 80's decade, there was much interest shown in some countries in the use of CD-ROMs for bibliographic data storage. In recent years IATUL has pioneered pilot training courses for library staff to use these techniques.[6]

USER SURVEYS

There have been several recent surveys of the use of information technology in libraries and institutions offering information services, particularly in
They draw the broad conclusion that the commercial market is leading the field; and the higher education sector, for which e.g. IATUL members are responsible, is generally starved of funds to pay the price for these services.

Nevertheless, there is a wide disparity between different sectors and there is an urgent need to rectify this. Let me give some examples of the way in which a gulf develops between the haves and have-nots in this field of technology.

**Example 1: reliable telecommunications for online searching and facsimile transmission.**

If you wish to offer satisfactory online search facilities, it is essential to establish a reliable telecommunications link between the database host and the user. In the early years this was impossible to achieve anywhere except in North America and parts of Europe. Musisi [10] reported at Lausanne in 1981 that in Kenya the only reliable telecommunications link was from Nairobi to London and that was very expensive and beyond the budget of any library in his country. Similarly, even today the telecommunications links with Eastern European countries are spasmodic and unpredictable. We have established Telexfacsimile links with Tallinn, Moscow, Ljubljana, Budapest, Sofia and Vesprém in the course of IATUL business but there is uncertainty on every occasion whether the transmission will succeed. Error messages are difficult to interpret and we frequently receive a duplicate copy of a whole document when errors were present solely on a single page but the error message did not convey this fact.

During the Gulf War we, in Britain, were impressed with the success of portable communications transmitters used by television reporters and correspondents in Saudi Arabia and Iraq. The method relied on the ability to find a suitable satellite link accessible to the portable transmitter. The technique was so successful that it is now being marketed for information services. This gives the first opportunity to refer to the question which is the title of this paper. What does it cost? The equipment is currently marketed at £8000. Telecommunications costs are negligible provided the ESA-sponsored satellite is used. Database fees average about £100 per hour. Such charges are beyond the resources of many libraries in developing countries, especially as payments must be made in hard currency. This is the first indication that there may be a division between the rich and poor. International agencies are giving some help but it is fragmented and there is little co-ordination. Some commercial owners of database services offer substantial reductions in access fees to academic users (in one case a 90% discount) and would be willing to extend this to developing countries for a limited period. What is needed is a comprehensive study to ascertain whether such services are cost effective in terms of the benefits conferred on the recipients.

The problem of satellite communication links is not as intractable as one might suppose. While in Beijing in 1988 it was reported to me that universities in Hawaii, Fiji and other Pacific Islands had been offered the free use of channels in a commercial satellite which had not been fully subscribed to by private sector customers. I understand that this offer was taken up and is now being used regularly.

**Example 2: CD-ROM.**

CD-ROM products are much in demand by information providers in North America and Western Europe. This is in spite of the fact that few of the libraries in Universities of Technology have received additional funding to obtain the necessary hardware and disks. The author conducted a brief review last year to determine the pricing trends among CD-ROM suppliers and found little evidence of falling prices in an expanding market [11]. The data have been updated to include 1991 prices and are summarized in Table 1.
TABLE 1: Trends in CD-ROM pricing for some common sci-tech products.

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<tr>
<td>Medline (two years archival)</td>
<td>1285</td>
<td>1250</td>
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<tr>
<td>MathSci (for print subscriber)</td>
<td>2275</td>
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<td>2162</td>
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<tr>
<td>Life Sciences Collection</td>
<td>2000</td>
<td>1750</td>
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<td>Cancer CD</td>
<td>3000</td>
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<td>Biological &amp; Agricultural Index</td>
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<td>1495</td>
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<td>AIDS information &amp; education worldwide</td>
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<td>Applied Science &amp; Technology Index</td>
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<td>NTIS (Silver Platter)</td>
<td>2750</td>
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<tr>
<td>Construction Criteria Base</td>
<td>970</td>
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<td>Pest bank</td>
<td>3000</td>
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The rule at present seems to be to charge as much as the market will bear; but how long this will continue is difficult to judge. Discussions with some suppliers at the IFLA 90 Conference in Stockholm indicated a willingness to supply to developing countries at the price of cost plus delivery charges and this was welcomed. However, there have been no reports that this initiative has been followed up. According to Ray Lester [12], some South American countries are managing to satisfy the basic needs of their patrons but there are no firm data to support this assertion. A report on this study is to be published later this year. It is, however, significant that some CD-ROM suppliers are now offering individuals (as opposed to institutions) CD-ROM subscriptions at a discount of 90%. Considering the cost of production, as evidenced by the market price of Hi-fi CDs, there is scope for even greater discounts (say as much as 99%) for some products.

An attempt is being made to determine the strength of the demand and the actual market level for CD-ROM products in developing countries but the investigation is not easy, particularly because of the difficulties of communication with third world institutions.

Example 3: e-mail.

To achieve a worthwhile e-mail service requires the support of a mainframe computer, either within the institution, commercially, or by connection to a network. The academic and scientific research communities have established networks covering the major universities in Western Europe, North America, Japan, and Australia. There is very little coverage of the developing countries such as China and India, nor developing regions and continents such as South-East Asia, Malaysia, Africa, South America and the Caribbean. Therein lies the problem of communicating with the third-world. Satellite communications have been established by international agencies such as UNESCO, TWAS and IRDC which can support the exchange of information between regional offices in electronic digital form [14] but there is, as yet, little demand within these
organizations for the support of an e-mail service. Further, limited expansion may be expected as a result of the growth of commercial activities in these regions during the next few years. But, until there are clear benefits to be seen from exploiting e-mail; there will be no expansion.

Example 4: automation.

In most libraries automation of operations was the first application of information technology to be attempted. Benefits were slow to be appreciated and the initial costs were high. In the early years of development between 1960 and 1980 most initiatives were financed by foundation grants or research and development funds. IDRC in Ottawa has been prominent in assisting developing countries in adapting to the use of these techniques, particularly for the support of microcomputer based catalogues. In this for the provision of online information retrieval, e-mail and CD-ROM services but the costs are high, both for hardware and maintenance. Also, considerable software skill is required to establish and maintain such facilities.

RECENT PERSONAL EXPERIENCES WORLD-WIDE

The uses of e-mail are not generally appreciated in the developed world of academic information providers. Two projects jointly organized by IATUL and IFLA give evidence of this.

A world guide to doctoral dissertations in science and technology.

Many of our members are participating in the compilation of a world guide to doctoral dissertations in science and technology, which is due to be published in 1992. Contributors are all members of IATUL or IFLA and the three editors invited contributors to correspond by fax or e-mail and to submit their contributions by e-mail or diskette. So far, out of 29 contributors, three have submitted text on diskette and one has used e-mail for correspondence. The low usage of e-mail for communicating is surprising, particularly in view of its frequent use for general correspondence. I believe the lack of interest is due to the slow development of the facility on university and polytechnic campuses. To use e-mail efficiently requires a network connection and few librarians have this at present. But, the situation is changing rapidly.

International Geosphere-Biosphere Programme Regional Information Centers.

The International Council of Scientific Unions (ICSU), of which IATUL is a Scientific Associate, adopted my suggestion to set up a world network of Scientific Information Centers, to hold and disseminate the contents of their reports. The scheme is now well-established and is beginning to function with 41 countries having correspondents in contact with IGBP HQ in Stockholm, and Oxford, where the system is coordinated.

Most of the exchange of information uses international postal services since coverage by e-mail has been found to be so patchy. However, it has been encouraging to discover how much use is now made of telefax transmission.

CONCLUSIONS

What is the answer to the question posed in the beginning? The evidence presented shows unequivocally that the products of information technology are currently much more widely used in the developed countries. To this extent the gulf, which existed before IT products were in use, has widened.

Is there any prospect of reducing the gap? The initiatives discussed at the ICSU General Assembly in 1990 show some promise of success in achieving a
reduction in the disparity. Clearly, the cost of CD-ROMs could be brought down drastically to a level which would make some of them competitive with hard-copy sources. The costs of satellite communications are high but there are several examples of commercial enterprises subsidizing these services for academic institutions. This is done in Europe as well as the remoter parts of the world, such as Africa and Oceania.

IATUL can influence these developments through such agencies as UNESCO, ICSU and IFLA and may significantly increase the supply of new technology products to the poorer nations. The demand is there and can be satisfied. How do we persuade the commercial brokers to cooperate?

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