Information Technology and the Role of the Librarian

William Marsterson

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INFORMATION TECHNOLOGY
AND THE ROLE OF THE LIBRARIAN

CROOM HELM LIBRARIES AND INFORMATION
TECHNOLOGY SERIES
Edited by P.J. Hills

*INFORMATION TECHNOLOGY AND LIBRARIES:
A FUTURE FOR ACADEMIC LIBRARIES*
Roy J. Adams

THE CROOM HELM LIBRARIES AND INFORMATION
TECHNOLOGY SERIES

We are at the beginning of a communications
revolution.

Developments in computers, electronic equipment and
telecommunications are bringing information
technology to all aspects of work and leisure.
These developments are focusing our attention on the
storage, retrieval and use of information, the way
we communicate with others, with ourselves, and with
the world.

This series explores developments in information
technology and the way in which they are changing
our world.

INFORMATION TECHNOLOGY AND THE ROLE OF THE LIBRARIAN
is written by William Marsterson, Systems Librarian
at Huddersfield Polytechnic. He has been involved in
the implementation of automated systems there and at
Newcastle upon Tyne Polytechnic Library over a
period of ten years.

This book considers the librarian as custodian,
communicator and educator. These roles enable him
both to inform his own system design and help him to
appraise the tools he uses. Information technology
is providing input and help in all of these roles,
as well as threats and dangers. The focus of this
book is not however on the technical aspects of
information technology, but rather, as Marsterson
puts it in his introduction, it is about "the nature
of librarianship as it is being and will be
practised in the 'information age'".

Philip Hills
Cambridge.

INTRODUCTION

The role which librarians play is not one that has
received much attention, either from social
psychologists, or from librarians themselves. This
book attempts to review the literature which should
inform research into the behavioural aspects of
information technology and librarianship. I have
chosen certain themes, and then illustrated them
with a variety of sources, some scholarly, some news
items, some commenting or passing opinions. Some of
the works which I encountered in searching the
literature have not been quoted or cited. I have
preferred to use a particular body of witnesses, as
it were, to illustrate my argument from various
angles rather than to prepare a comprehensive
bibliography. Nevertheless, I hope that I have
managed to include a fair representation of the main
lines of argument and development in Britain and
North America on information technology and the role
of the librarian.
    The first chapter considers currently held
views of librarianship from within and outside the
profession, with particular reference to
occupational sociology and professional roles. The
impact of information technology on publishing and
scholarship is related to the perceived roles of the
librarian. In the next three chapters we turn to
three areas of librarianship, professional
education, staff organization and library buildings
and equipment. In each case we explore through the
experience of recent authors ways in which the
librarian's role is being and may be altered to
respond to external change. This is followed by four
chapters looking at different aspects of providing a
library service, cataloguing and access to
information, library housekeeping and management
information systems, the formats in which

information is packaged and user education. A final
chapter returns to the theme of the first, and
discusses the librarian's role as it affects service
to his clients as common participators in the use of
information technology.

I have omitted some aspects of librarianship:
the book concentrates on libraries within education;
there is no discussion of data protection and only
passing reference to intellectual freedom. The
limitation was chosen as a practical way of writing
the book within the allotted time, and before it
became too out of date. As the text explains and
illustrates, I have chosen a limited period for the
literature review. Few items prior to 1980 have been
used, and the majority of items were published after
1982: the other end of the review period is
September 1985, and relevant items published since
that date have had to be ignored. The period was
indicated by my intention to discuss the role of the
librarian as affected by information technology,
itself a term not found before this period. The book
is not, however, a technical discussion of how
machines or systems work. I firmly believe that in
order to design either of these components we need
to know why they are required and what they are to
be used for. What I hope to draw attention to in
this book is the nature of librarianship as it is
being and will be practised in the 'information
age'. Various ideas and theories will be identified.
It remains for a more thorough-going piece of work
to investigate these more fully and to test them
within a behavioural research framework.

Being a literature review, many of the opinions
and arguments quoted are attributed to writers with
greater experience and understanding than my own.
Nevertheless I hope that by bringing together these
writers' works I may have added some element to the
overall picture of librarianship today. I take
responsibility for the interpretation I have placed
on their writings, and for the argument implied by
this synthesis.

I owe a debt of thanks to a large number of
people who have helped me to write this book. The
libraries of Sheffield University, Manchester
Polytechnic and the Leeds Department of
Librarianship have supplemented the resources of my
own library. My fellow members of the COPOL
Information Technology Working Group have provided
mental stimulus and the source of several of the
opinions quoted. My colleagues at Huddersfield
Polytechnic have been forbearing at a number of

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Introduction

Chapter One

THE LIBRARIAN'S ROLE: PERCEPTIONS AND CHALLENGES

> This book was written on an Archives III
> microcomputer with Word Star software and sent
> from Colombo to New York on one five-inch
> diskette. Last minute corrections were
> transmitted through the Padukka Earth Station
> and the Indian Ocean Intelsat V. (Arthur C.
> Clarke. 2010: Odyssey Two (final
> acknowledgement)(1)).

> "It's a very old Orange Catholic Bible made for
> space travellers. Not a filmbook, but actually
> printed on filament paper. It has its own
> magnifier and electrostatic charge system..."
> "It's so small."
> "But it has eighteen hundred pages... Never
> touch the actual pages with your fingers. The
> filament is too delicate."
> (Frank Herbert. Dune. (2))

I have chosen to set the scene for this book with
two quotations from popular classics of science
fiction, partly because Arthur C. Clarke at least
has the reputation of foreshadowing fact remarkably
closely. The reader should be aware that what is
described in fanciful and futuristic terms may well
become established as part of our normal way of
life. Indeed, while it has not been necessary for me
to communicate with the publisher of this book by
satellite, the text has been prepared using the same
kind of technology as Clarke, and I guess that this
applies to the other books in this series. The
quotation from Dune is echoed by an article in a
Russian library journal discussing self-contained
library support for lengthy space expeditions (3).
This book explores the threats and challenges as
well as the promises held out to one group of

1

workers in the field of communication of information by the rapid developments in information technology of the last five years or so.

In the case of the quotation from Dune we see Prince Paul acquiring information. The technology is very evident: the information is taken for granted. The means of gaining access to the information is not at all important to the reader of science fiction, even less the film goer, but if challenged, he might be hard put to say just how the information got into the filmbook, or its electronic predecessor. From a scientist inputting data to a computer store? Perhaps- but who organized the information store, indexed the data, prepared it for access and so on? At present such information would be made available by what has fairly recently come to be called an "information professional", someone working in the "knowledge industry". This industry is going to be just as necessary in the year 2010 or 10,190, even if the activity is not evident to the public at large. As a librarian I identify myself as an "information professional", but I would prefer it that my professional contribution be recognized rather than taken for granted. There is, I believe, a distinct danger that the work of those involved in information transfer may suffer through unthinking application of new technology, or through political and economic leaders imagining that the technology somehow replaces the efforts of information professionals.

For this reason I believe it is appropriate to consider the ways in which information technology can be put into perspective; the work of the librarian needs to be examined alongside the technological potential, and the two related together. The problem that I want to explore in this book is not how to use information technology, but why. I hope to show that information technology helps knowledge workers to accomplish their tasks more efficiently and with greater power, but also that it can give depth to the purpose of those tasks, and enable those involved in the communication of information to promote the part they play in this, and therefore in society at large. To achieve this I have chosen to concentrate on my own sector of the knowledge industry, librarianship, and to draw examples largely from academic librarianship. The form of this book is that of an extended literature review, drawing mainly on other writers' views and findings, although there will be points where my own personal

observation and survey work will support the
argument.

INFORMATION TECHNOLOGY: DEFINITIONS AND DIRECTIONS

"Information Technology has resulted from a
convergence of computing technology and
communications technology" (4). Ian Sommerville,
whose definition I have quoted, has presented the
layman with a readable and humane description of
what information technology consists of, and
outlines several applications- in the home, in the
office, in medicine, in banking. The technology is
clearly explained without daunting technical detail,
and the social implications of its implementation
are presented. As if to reinforce the fear raised in
the previous section, there is no mention of the use
of information technology in libraries, apart from
using the example of a book catalogue at one point.
Nevertheless the book would provide a librarian with
a useful starting point for reviewing the different
components of the new technology, and the social or
applications-based approach ensures that it will
remain relevant even if particular technologies turn
out to be superseded.
      Central to information technology is the use of
computing power, typified by the ability of machines
to contain and handle very large amounts of
information within comparatively small physical
space, coupled with the ability to extend these
resources apparently indefinitely through a variety
of communication devices, or networks. A further
element of the picture is a variety of media for
storage and presentation of information. At present
information technology connects information stored
on paper with information viewed on a screen, either
medium consisting of words, figures, diagrams or
pictures, the latter being still or moving. The mode
of communication may be through a direct physical
link (cable of various sorts) or broadcast. Some
information is presented not as static but dynamic,
through the ability of the user to interact with it,
either changing the information or responding to it.
      This technology has been evolving very rapidly
during the last half of the twentieth century, with
a speed and power which has caused a number of
social commentators to assume that it will replace
the older modes of communication, notably print on
paper and verbal face-to-face communication. Various
librarians in particular have written eloquently

about the likely demise of libraries, based as they are on the more traditional technology of print (5,6). We shall return to their arguments in a later section of this chapter, when we consider the role of the librarian as identified in the literature. However, predictions about the effect of technology on sections of society and on communication are at present commonplace. Sommerville, we noted, is concerned about the social effects of information technology, and his book covers problems such as data protection, computer crime, and large-scale unemployment caused by the deskilling of jobs both in industry and commerce. The future of the printed word threatened by information technology has caused worries amongst those involved in newspaper production; some aspects of this are discussed by Cockburn in her study of compositors, who appear to be much less willing to experiment with technology which diminishes what they perceive as their role, than librarians have been (7). Perhaps librarians hope they have a role to gain. However, a recent collection of papers dealing with the future of the printed word (8) suggests that such fears may be overstated. At present the paperless society does not appear to be a reality even in the affluent West, let alone for those developing countries for whom the new technology is simply not affordable, and through lack of communications links, not available either. Computers at present seem to generate paper rather than replace it.

A measured evaluation of the impact of new technology on scholarly communication is presented by Katzen (9) who argues that electronic modes of communication will complement rather than supersede paper. She notes the features of information technology outlined above as its specific advantages; that is, that the information so contained and communicated is infinitely malleable; that it can be stored in great quantity; that it can be communicated instantly over distance; and, the radically new feature, that it can allow response and interaction. But contrasted with this she notes various disadvantages.

Firstly, access to electronic information is restricted in various ways: by cost, by availability of physical connections and by various forms of protection. Secondly, there are problems in actually using information through electronic means, namely the ergonomics of screens, the lack of portability and difficulties in browsing. Thirdly, she lists problems concerned with the supply of information,

and fourthly problems created by its control,
whether by the dominance of a commercial monopoly or
of a national culture. Each of these constraints may
be overcome. After all, journals and monographs in
paper form are expensive as well; communications
cables can be laid (eventually and at a cost);
passwords can be broken; there are portable
microcomputers which run on batteries. Nevertheless
electronic modes of information storage and
communication are clearly not yet as available as
paper, despite Thompson's argument that traditional
libraries and paper-based media are becoming
unusable and will soon be replaced by the
all-powerful new technology. As for ergonomics, it
is impossible to change the physical nature of eyes,
backs and so on, and therefore machinery must be
designed to take account of the needs of the human
body. Improvements have been made to the design of
print on paper to avoid eye strain and to facilitate
reading: the same care has to be applied to the
design of electronic forms of communication. But
given investment in research it should be possible
to design screens which offend the eye no less than
paper (10). Of all Katzen's disadvantages I believe
that the one most hard to dispel is the point made
about browsing. Print on paper in codex form is
particularly flexible and provides facilities for
browsing and for multiple and random access which,
compared with electronic means, are very cheap to
achieve. Notwithstanding the possibility that these
disadvantages may be overcome, they are distinctly
real at present, and require political and economic
efforts to be made as well as technical advances.
This point was also noted in the Library
Association's document on the impact of new
technology on libraries (11).
    Katzen notes that different media present
characteristics of communicability where the
dependence of the medium on some other condition for
its use is in inverse ratio to its power to
establish a dynamic channel for communication. Thus
paper is a self-sufficient medium for the user: it
needs no power source, it is rapidly accessible and
available at relatively low cost. On the other hand
it is restricted in place, and therefore must be
copied and distributed which may impose delays on
access. It is incapable of feedback. Some media are
semi-dependent, for instance microforms, which are
somewhat less accessible than paper, since they
require machinery before they can be used. They do
not need anything other than power to establish