Microcomputer Software in Library Collections

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INTRODUCTION

THE PROLIFERATION OF computers, especially microcomputers, during the last ten years has had a profound impact on the structure and operation of libraries and has altered the character of their collections. As a result, librarians have modified the principles and practices that determine their collection development policies. This process of transformation raises a number of pressing questions. Why would libraries, which traditionally have acquired information in printed form—such as books, journals, reports, and newspapers—or at least in a form which could be seen—such as microfiche and filmstrips—want to add computer software to their collections? What are the issues which librarians need to be aware of as they introduce microcomputer software to their collections? How have librarians successfully integrated software into the existing flow of information? Many librarians have confronted these concerns, but others are still uncertain about the role of software in library collections.

The ALA definition of *software* is "computer programs, routines, procedure, and other documentation associated with operating a computer system." (American Library Association [ALA] 1983, p. 210). The physical format of this software may be a disk—i.e., a "round metal disk coated with a magnetizable material on which data can be recorded and stored along concentric tracks as small magnetic spots forming patterns of binary digits or bits" (ALA 1983, p. 75). A diskette or floppy disk is one type of disk, made of soft plastic which can store information on one or both sides. They come in three standard sizes: 3.5 inches, 5.25 inches, and 8 inches. Intner (1988) listed twelve categories of software, includ-

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ing word processors, spreadsheets, graphics, statistics, communica-
tions, utilities, compilers, games, education, integrated packages, and
specialized programs, with some software belonging to more than one
category (pp. 9-10).

As microcomputer software became a collection development issue
a decade ago, librarians questioned whether this new format was
appropriate for collections in various types of libraries. Nordine argued
that academic librarians should acquire software because they have the
skills to organize information, and that software is just like any other
library material except in the way that it is read (cited in Walch 1985, p.
406). He also reminded librarians that if we do not assume responsibility
for software collections, someone else will, and we may regret not
having authority over this form of information. Librarians at North
Texas State decided that they "must take the philosophical stance that
information, regardless of format, should be collected by an academic
library if it is important to the educational goals of the university"
(Galloway et al. 1986, pp. 650-54).

Woolls and Loertscher (1986) expressed similar opinions about
microcomputers and software in school libraries, noting that "it is
appropriate for leadership in microcomputer programs to come from
library media specialists" because this "is the educational professional
with the most training in the selection of reference and research mate-
rials to expand the curriculum beyond the textbook" (pp. vii-viii). Also,
the library media specialist traditionally is the one who introduces new
technology to the school.

Public libraries, which may already include videocassettes, art
prints, and educational toys in their collections, found it logical to add
software as well. "Give people what they want but could not afford to
buy themselves" reflects the attitude of public librarians who were
quick to meet a new demand (Polly 1986, pp. 20-22). They learned to
cope with the new problems of selecting, acquiring, organizing, stor-
ing, and circulating microcomputer software in libraries.

SELECTION

A collection development policy covering software will include
specific information about the scope of the collection, selection criteria,
the policy about multiple copies, hardware compatibility, selection
responsibility, and funding. Dudley (1986) reported that "those libraries
with software policies basically extended their current acquisitions
policies by recognizing software as information in a different format,
acquired with the same guidelines used for any format, to be integrated
into a library's existing collection" (pp. 704-06). Examples of some
specific collection development policies can be found in the SPEC Kit
on *Microcomputer Software Policies in ARL Libraries* (1986).
Although developed by academic libraries, they can serve as examples
for other types of collections.

It is necessary for library administrators to decide whether the collection will be restricted to instructional software or if recreational, utility, or other types of software will be purchased as well. Instructional software, or courseware, may include tutorials, simulations, or drills. Recreational software, including games and interactive fiction, is popular in public libraries but is often excluded from the collections of academic libraries. Utility or productivity software includes word processing programs for writing and spreadsheets for the manipulation and analysis of numeric data. Some libraries choose to provide only educational software, arguing that utility software should be purchased by the owner of any computer, while other librarians believe that reference collections should now offer the software version of commonly used printed tools such as dictionaries (Hannigan 1985, pp. 327-48).

It is also necessary to decide if software will only be selected to run on certain types of hardware such as the IBM PC (and its compatible clones) or Apple computers. Libraries may limit their software to that which can be used on their public access computers. Other libraries provide a variety of software which may not be usable in the library but which meets the needs of their clients. As prices of personal computers drop, more library users will have their own hardware but may need a greater variety of software for occasional use. It is advisable to have a policy to deal with requests for specific types of software or for particular titles. Rather than attempting to anticipate demand, a library may prefer to buy software only when a need is evidenced by one or more requests.

These same selection policies may also be used for public domain software and shareware, or separate policies may need to be articulated. Public domain software is not copyrighted and is available to the user free of any charge. User support is not available, and accompanying documentation is often poor or nonexistent. Shareware, or user-supported software, is copyrighted but is not advertised or reviewed in the usual ways. Librarians can learn about shareware at local microcomputer clubs or on electronic bulletin boards and download a copy to disk. After trying the software, libraries that intend to retain the copy can pay a nominal fee (usually $10 to $50) to the author. This fee will register the user who will receive any documentation for the software and revised versions of the program (Camille 1987, pp. 74-81).

Selection responsibility for software may be assigned to those who select books and other media on the same subject (science, business, or education) or for the same audience (children, young adults, adults). Other libraries may designate a special selector or a software selection committee. Piele (1986) suggested that if an outside group, such as a personal computer users group, participates in the selection process in a library, it is important to specify who will have final authority to decide what software will be added. This advice applies to school libraries

where teachers may become more aware of the software collection when they are encouraged to participate in the selection process. Academic libraries in particular may find that some of the monographs which they acquire will arrive with one or more unanticipated software disks. A collection development policy will need to be clear about what is to be done with such software, and who will have authority to make the decision to keep or return the material.

Swigger (1986) has reminded librarians who might be apprehensive about deciding which software to acquire that the selection of software for a library's collection requires the same skills necessary to select any other material for the collection. When reading reviews or examining software, the selector should look for an evaluation of the age and skill level required to make use of the program, as well as an assessment of its subject content. Librarians, like their clients, should also look for software that is easy to use, especially those programs with help screens and manuals written in nontechnical language. Many librarians have developed selection criteria to be applied to software purchases. Dewey (1987) suggested nine guidelines for selecting software: documentation, user friendliness, capacity, speed, vendor support, hardware compatibility, sophistication, integration, and references (pp. xiii-xiv). He did admit, however, that few pieces of software would meet all of these criteria.

Library publications that review software include *American Libraries, Booklist, Choice, Library Journal, Library Software Review, Micro-Software Report, School Library Journal, School Library Media Quarterly, Small Computers in Libraries, Technical Services Quarterly,* and *Wilson Library Bulletin.* Some of these publications may focus their reviews on particular types of programs. *Choice,* for example, does not review productivity software. Various publications for educators, such as *EDUCOM Bulletin, Childhood Education, Educational Technology, Science Teacher,* or *T.E.S.S.: The Educational Software Selector* also offer reviews and advice. The International Software Database provides online information about software as do some other online sources and bulletin boards although these may not include reviews.

Reviews of software may also be found in a variety of computing journals such as *A+, Bulletin Board Systems, Byte, Creative Computing, InCider, InfoWorld, Interface Age, Microcomputing, PC Magazine, PC World, Software Reports,* and *Software Reviews on File.* Reader service cards found in most such publications are a convenient way to get more information about software that has been announced or advertised in the current issue. Lists of best-selling software can also be used to identify popular programs in high demand. Glossbrenner's (1984) *How to Get Free Software,* is a 400+-page guide to public domain software for many types of computers, although it is now becoming out of date.

An alternative approach to selection has been used at the Liverpool (New York) Public Library. One afternoon each month, the group of

software selectors visits local computer stores to preview, use, and purchase software. They are given a 25 percent discount and have the advantage of already being familiar with the new software in the collection (Polly 1986, p. 21). If in-person purchases are not possible, software may be ordered from many of the jobbers already used by libraries. It is also possible to order directly from the publisher. Walch (1984) reported that 38 percent of the sixty-eight software producers in his survey offered "approval purchases," but he does not identify the names of the companies.

As is true when any new medium is first collected, librarians will have to decide which source of funds will be used for software purchases. Not all software is expensive, and some may be free, but many popular programs cost several hundred dollars each. In an already tight budget, purchasing software will mean that some other purchases will not be made. Funds may be allocated from existing budget lines, such as those for books or audiovisual materials. In other libraries, the funds could come from allocations for materials for children or young adults or reference materials. Software purchases may not even need to be differentiated within these categories if the library does not intend to specify the amount of money spent on this particular format. Alternatively, a special fund for software may be designated which could be used for all purchases, regardless of the intended audience.

CATALOGING AND CLASSIFICATION

Of the many considerations involved in the inclusion of software in library collections, the problem of cataloging received the most attention in the library literature. Part of the problem is similar to that encountered whenever a new format is introduced to library collections. Inevitably, some time is required before descriptive cataloging policies and practices are documented. In the case of computer software, the difficulty is compounded by the fact that the rules in chapter 9 of *AACR2* for cataloging machine-readable data files were published in 1978 when microcomputers and their software were only beginning to be developed. As a result, the rules are not adequate to meet the needs of catalogers.

The representatives of the American Library Association, the Canadian Library Association, and the Library Association are aware of the existing difficulties, but the process of changing any international rules is a slow one. To help librarians deal with the existing rules, the American Library Association published *Guidelines for Using AACR2 Chapter 9 for Cataloging Microcomputer Software* (1984). Unfortunately, as Dodd and Sandburg-Fox (1985) observe, this thirty-two page pamphlet did not solve the problem: "On more than one occasion we discovered the inadequacies of both chapter 9 and the *Guidelines*" (p. xi). Both Dodd and Sandburg-Fox are experienced catalogers who had participated in preparing the *Guidelines*. Their criticisms are espe-

cially telling because, in spite of the best efforts of catalogers to stay current, the technology is changing so frequently that it has been impossible for any set of rules or guidelines to anticipate all contingencies and developments. In 1987, a draft revision of chapter 9 was published (Gorman 1987). This version was the result of discussion, reflection, and compromise by British, U.S., and Canadian catalogers and will provide a transition to the rules in the new chapter 9.

When chapter 9 was first released, one of the most awkward aspects of the cataloging was the use of the term *machine-readable data files* as the general material designation. This broad term was not familiar to users and, even in well-cataloged collections, users who were searching for software sometimes did not recognize this designation as indicative of the material they wanted. One of the compromises in the draft revision of chapter 9 was to change the general material designation to "computer files," which may prove to be clearer. Nesbitt (1986) has encouraged user-oriented cataloging of software and suggested that *computer software* or *microcomputer software* are terms which librarians can use and are more likely to be understood by the user.

AACR2 makes provision for including such specifics as program language and system requirements in the descriptive cataloging of software. Catalogers should be able to load the software to "see" this information, especially if the accompanying documentation is incomplete. As is often the case in other nonprint formats, such vital information as producer, programmer, edition, or even publication date may be difficult to identify. When assigning subject headings, catalogers should resist the temptation to use "software" as a heading. They should select meaningful subject headings which can then be followed by a subheading such as "software." Additional subheadings may be used to indicate instructional or recreational functions of the software (Nesbitt 1986, pp. 23-24).

In libraries that have large or rapidly growing software collections, there will be enough material to catalog so that one or more individuals will be able to develop some expertise and confidence in dealing with this format. However, many libraries rely on Cataloging in Publication (CIP) to meet most of their cataloging needs and they are not accustomed to producing large quantities of original cataloging. CIP has not been available for software, but the Library of Congress has planned a pilot study on the feasibility of providing CIP for microcomputer software. This will provide a large-scale test of the chapter 9 rules, the appropriateness of subject headings, and the use of LC and Dewey schedules to indicate subject (Weihs 1988, p. 42).

Richards (1983) candidly noted that those who come to libraries to use software do not care about the cataloging issues that confront librarians (pp. 68-69). What the users are interested in, and rightly so, is access to the software. As recently as December 1985, only 30 percent of ARL libraries were cataloging software using *AACR2*. What is the

alternative? Libraries with smaller software collections or those that are comfortable with not having full cataloging for part of their collections have relied upon title lists and abbreviated cataloging records.

STORAGE

After selecting, acquiring, and cataloging the software, librarians will have to determine the conditions under which it will be housed within the library. Some libraries want to integrate their software collections into the stacks with the book collections. In such situations, the written documentation for the software can be kept with the disk. Other libraries have not permitted any software to be kept in the stacks including software that may accompany a monograph. The concern is that stack conditions are hazardous to software. Libraries that do not house software in the general stacks may choose to store it in a reserve book collection, as part of the reference collection, or in a separate computer lab.

Whether the software is stored with the rest of the collection or in some separate area, any documentation that comes with the program or anything else to be used with the software should be labeled to show how many pieces are to be used together. This will make it possible to restore misplaced items to the proper set. This is similar to the situation which exists in libraries with many audiovisual sets.

Care must also be taken in labeling software. Extra layers of paper labels on the disks themselves may catch in the disk drives of the computer. By now, most librarians know that paper clips should never be used on software, even temporarily. Unlike books, computer disks are susceptible to having their contents changed through a variety of processes, even though the disk itself will appear unaltered. Olson (1983) offered suggestions for storing disks to prolong their useful life. These include keeping them away from magnetic surfaces—including the top of the disk drive—and sources of static electricity. They should also be protected from dust, smoke, and hair by storing them in closed containers. She noted that: "Computer disks should not be folded, bent, heated, squeezed, sat on, exposed to the heat of the sun, carried in pockets, chewed by dogs, or used as frisbees. Such treatment usually results in a blank microcomputer screen." These are certainly contemporary words to live by.

Dustproof boxes for disks may be purchased from library supply vendors. Special plastic pages with pockets which can be kept in three-ring binders are also available. Some libraries use these plastic pages but hang them in file cabinets in the reference department. Other libraries put software into diskette carrying cases and label them with color-coded dots to indicate what kind of hardware should be used with particular programs. The boxes of disks are kept behind the circulation desk where patrons request the programs they need.

Libraries do not usually keep backup copies of the items in their collections. If a book is lost or damaged, a replacement copy may be

purchased only if the librarians have determined that there is expected continued demand for that particular title and edition. Librarians sometimes follow a different practice when dealing with software. Because of the initial expense of purchase and the many ways that the information on a disk can be erased and, also, because the small size of a disk makes it easy to steal, librarians have been concerned about buying software only to see it lost or damaged. One solution is to keep the original copy of the software in a secure location and circulate only a backup copy. Copyright restrictions, described later, should be observed in such cases.

CIRCULATION

An additional decision to be made by librarians is whether the software in the collection should be allowed to circulate and, if so, under what conditions. Libraries that circulate information in other formats may initially assume that software can be circulated as well. A variety of libraries have indeed come to this conclusion. However, before beginning to circulate software, these libraries need to decide how to deal with the problems of potential damage to the software and copyright violations.

In spite of the long-term preservation problems associated with paper, most librarians are content to process their books, put them on the shelf, and let them circulate. As noted earlier, these same librarians are frequently more concerned with the preservation problems associated with the software in their collections. In some cases, they have used this concern to justify not circulating the software or severely restricting circulation. There are clearly a variety of ways to damage software, but these should not necessarily be used as arguments to prohibit software circulation. Libraries also circulate books which users can leave out in the rain, or let their dogs chew, or mutilate by ripping out pages. The potential for damage in these cases has not been thought to be sufficient reason for restricting circulation.

Precautions similar to those recommended for storage of software can be taken to protect it while circulating. A label can be affixed to the software packaging with a warning that it should be kept away from magnetic fields. This is especially important in libraries which use a magnetic strip as part of a security system. If the staff were to follow the routine procedure of passing library materials through a magnetic field to "sensitize" the item before it circulates, the information on a disk might be erased or scrambled. Most of the electronic detection systems will not erase software although each library should verify this point with the manufacturer of the security system. Circulating software should also be "write protected" so that the contents cannot be accidentally changed through use. There is, however, little that libraries can do to prevent intentional changes made by borrowers. A determined abuser can probably find a way to tamper with software, just as some users of print sources will mutilate them.

Libraries do, in fact, successfully circulate software. For several years, the Minneapolis Public Library has circulated software with surprisingly few problems. Patrons check out the software from the reference desk and are specifically reminded that software must not be left in the book drop because of the potential for damage to the disk. The librarians found that only seven pieces of software were damaged in the first 1,100 circulations (Smisek 1985, pp. 108-09). The Liverpool (New York) Public Library does often find software in its bookdrops. They have reported that, in spite of this rough treatment, the software has not been damaged (Polly 1986, p. 22). This is probably due to the protective container provided for software that circulates. The North Central Regional Library in Washington State is even more optimistic about the ease of circulating software. As with their books, they successfully circulate software through the mails to their rural clients ("Software Comes by Mail..." 1985, p. 29).

The Del Ray School in Orinda, California, purchased $10,000 worth of software with a grant which required that purchases must be available for loan. The librarian recruited enthusiastic parents who staff the software lending library which is open once a week. The collection is available to everyone in the community, not just to the school's students and their parents. The library has reported no problems with theft or damage to the software. In Sacramento, California, the Educational Research and Development Department has provided each school in the county with an Apple computer. The central library conducted a study of software which circulated to an experimental group of teachers in the county. In two years only six disks were damaged, three by the same faulty disk drive. The damaged disks were replaced by the vendors at no charge. The library does not make archival backup copies of software because it considers this practice to be too time-consuming (Berglund 1986, pp. 39-40).

While many public and school libraries have reported their success in circulating software, academic libraries have been less likely to offer this service. A survey of 293 academic libraries by *Choice* found that only 10 percent circulate microcomputer software, while a study of ARL libraries found that only 38 percent circulate software to their users (Dudley 1986, pp. 704-05; ARL 1986, p. 2).

The policies of most libraries that circulate software indicate that the circulation time is significantly shorter than that allowed for print material. The period may be as short as one day and is rarely longer than one week. There is frequently an additional restriction on the number of pieces of software which may be borrowed at one time. Fines for overdue software may be more substantial than are those for other materials.

Libraries that collect software but do not choose to circulate it will of course need to provide a suitable array of computers for in-house use. Even libraries that do circulate software may have public access microcomputers for their users who do not have personal computers. The

expense of purchasing and maintaining hardware, including printers, has discouraged some libraries from contemplating such acquisitions. Finding the required space, providing sufficient wiring, and allocating staff to supervise the area are additional concerns. Libraries that have acquired microcomputers may find it necessary to schedule the use of the hardware during busy times and perhaps to schedule the use of popular software as well. Some librarians have gone so far as to suggest the screening of potential users to reduce the chances that they will make copies of software or otherwise violate copyright laws (McKirdy 1988, p. 121; Uppgard 1987, pp. 28-32).

COPYRIGHT

Most articles in the library literature which discuss software, whether from the point of view of selection, storage, or circulation, mention the problems associated with copyright protection. Some aspects of these issues are confusing and the ALA Office of Copyright, Rights and Permissions has published a statement from the ALA legal counsel which succinctly explains the law and how librarians can apply it (Reed & Stanek 1986). McKirdy (1988) recently reviewed the legal history of copyrighted software and related issues (1988, pp. 98-125).

Two broad areas of concern involving copyright and software are ownership and copying. Although many purchasers of software believe they own the software when they pay for it, they may not. The publishers frequently have a notice on the plastic shrinkwrap around the software which indicates that it is "licensed" and not sold to the individual. The statement generally indicates that opening the package constitutes acceptance and agreement to the licensing conditions and restrictions listed on the package. Such restrictions do not permit the simultaneous use of copies of the software and prohibit loading the program on several computers at the same time. This stipulation is of particular concern to circulation librarians, as are other terms which may specifically prohibit lending the software.

To date, there have been no court cases involving circulation of software by any kind of library. However, legal counsel to the American Library Association has advised that "in the absence of authority to the contrary, one should assume that such licenses are in fact binding contracts" (Reed & Stanek 1986). Reed and Stanek also suggested that librarians can avoid the standard license by noting on their purchase orders that the library intends to circulate the software. The statement should say: "Purchase is ordered for library circulation and patron use." When the order is filled, the supplier is agreeing to the librarian's conditions. This simple precaution has been considered sufficient to enable librarians to circulate the software under normal circumstances.

The other copyright problem is that of copying software. One aspect of this issue deals with exactly what constitutes a "copy" of a program. Clearly a reproduction of the program on another disk is a

copy, just as making a photocopy of a printed page is a copy. Those who purchase (not license) software are usually permitted to make one archival copy for their own use. Only one copy, either the archival copy or the original, may circulate or be in use at any time. ALA recommends that if the circulating copy is stolen or damaged, the library should contact the publisher (or copyright owner) before circulating the "archival copy." Also, all software and all library computers which are capable of making copies should display a warning about the protection of computer programs under the copyright law.

Until 1982, there was another concern about copying software. Because of the nature of computers, a "copy" of the program is made when the software is loaded on the computer. In 1982, Congress determined that such a copy is not an infringement of copyright protection (Warrick 1984, pp. 9-12). Such hair-splitting is not surprising when one considers the high financial stakes involved in microcomputer software sales.

It is possible for software publishers to program protection mechanisms into their software. These may limit the number of times it can be installed or prevent any copying at all—even to make a backup copy. These protections are not as successful as even the most sophisticated software companies would like. As Walch (1984) observed, "there is a select group of computer aficionados that especially enjoy the challenge of cracking the protection code and making copies" (p. 408). It has also been noted that "the software safecrackers can find ways to unlock protected programs faster than new locking mechanisms can be thought up...[and] publishers are coming to realize that copy-protection has little impact on savvy users bent on unauthorized copying (Beiser 1986, p. 42).

If there are so many legal restrictions on the use of software, how can a library ever allow diskettes to be used without having a lawyer at the circulation desk? In general, staff should be aware of the restrictions and the reasons for them so that library policy will be uniformly applied. Some libraries put a warning on their software, such as: "The copyright laws regarding the use of software are very stringent. The misuse by only a single borrower may jeopardize the library's continuation for all. No copying of any documentation or software is permissible" (Berglund 1986, p. 40). In other libraries, staff may read a similar statement to the patrons or have the patrons sign copies of the statement after they have read it themselves. This serves to inform borrowers of their obligations and to protect the library.

In Montana, one public library solved the problem of copyright restrictions on software by purchasing 370 public domain software programs available for the IBM-PC. These programs, which are not protected by copyright, include word processing packages, games, and self-help software such as tax preparation instruction. The reference department in the library copies the software onto blank disks provided

by the user. The library has encouraged another library in the area to acquire all of the public domain software for Apple computers so that the two libraries can share these popular resources ("Public Domain Software..." 1986, p. 28). A special library put its extensive collection of public domain software on compact disc with remote access so that even those users who do not actually come into the library can use the software (Welsh & Martin 1988, pp. 29-30).

Librarians should determine if their institutions have acquired site licenses for some software which would enable them to use multiple copies. It is also possible to negotiate with the publisher for backup copies when the program does not permit copying (Talab 1987, pp. 36-39). More than 40 percent of software publishers in one survey provide for multiple-copy licensing at a reduced cost and 38 percent reported that they would provide free backup copies (Walch 1984, pp. 405-10).

As the micrcomputer software industry has become more competitive, software companies have revised their restrictive copying policies and librarians and other users can now purchase name-brand software that is not copy-protected. For example, in September 1986, Ashton-Tate announced that they would offer "an unprotected version of *dBase III+* or *Framework II* for an upgrade fee of $45 to registered users of these programs" (Beiser 1986, p. 42). Microsoft and Lotus, other leading publishers of microcomputer software, have also removed copy limitations (Fersko-Weiss 1987, pp. 195-222).

CONCLUSION

In the next few years, a new generation of "computerliterate" library users may create increased demand for software in all libraries. We can expect further refinements of the cataloging rules for software, and perhaps even CIP for the majority of commercial software. Librarians may even be able to expect simplification of the selection process if compatibility standards are introduced by the software industry. Copyright restrictions are likely to remain a problem for librarians who work with software as they are for those who handle book and journal collections.

Librarians have responded very effectively to the development of microcomputer software by creating opportunities to introduce this technology into library collections. The number of articles about software in libraries indexed in *Library Literature* has increased dramatically in the past few years, and new journals devoted to aspects of this topic are now available. As librarians publish descriptions of their successful methods for dealing with this new technology, they will save other librarians from some of the pitfalls and frustrations involved in the development of policies and procedures for the selection, acquisition, cataloging, storage, and circulation of this new and burgeoning form of information. This is how the library profession has accommodated itself to innovation in the past and how it will do so in the future.

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