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december, 1981

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2-1552

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Journal of Library Automation is the official publication of the Library and Information Technology Association, a division of the American Library Association, 50 E. Huron St., Chicago, IL 60611; *Executive Director*: Donald P. Hammer. The journal is issued quarterly in March, June, September, and December.

Journal of Library Automation publishes material related to all aspects of library and information technology. Some specific topics of interest are: Automated Bibliographic Control, AV Techniques, Communications Technology, Cable Systems, Computerized Information Processing, Data Management, Facsimile Applications, File Organization, Legal and Regulatory Matters, Library Networks, Storage and Retrieval Systems, Systems Analysis, and Video Technologies. The *Journal* welcomes unsolicited manuscripts. Submissions should follow the guidelines stated under "Instructions to Authors" on page 143 of this volume.

Manuscripts of articles, communications, and news items should be addressed to: Brian Aveney, Editor, *Journal of Library Automation*, Blackwell North America, 10300 S.W. Allen Blvd., Beaverton, OR 97005. Copies of books submitted for review should be addressed to: David L. Weisbrod, *JOLA Book Reviews*, Systems Office, Yale University Library, Box 1603A, Yale Station, New Haven, CT 06520. Advertising arrangements should be made with Judith G. Schmidt, 1408 D St., SE, Washington, DC 20003.

Journal of Library Automation is a perquisite of membership in the Library and Information Technology Association. Subscription price, \$7.50, is included in membership dues. Nonmembers may subscribe for \$15 per year. Single copies, \$4.

Circulation and Production: American Library Association, 50 E. Huron St., Chicago, IL 60611. Please allow six weeks for change of address.

Publication of material in the *Journal of Library Automation* does not constitute official endorsement by the Library and Information Technology Association or the American Library Association.

Abstracted in *Computer & Information Systems*, *Computing Reviews*, *Information Science Abstracts*, *Library & Information Science Abstracts*, *Referativnyi Zhurnal*, *Nauchnaya i Tekhnicheskaya Informatsiya*, *Otdyelnyy Vypusk*, and *Science Abstracts Publications*. Indexed in *Current Contents*, *Current Index to Journals in Education*, *Education*, *Library Literature*, and *Quarterly Bibliography of Computers and Data Processing*. Microfilm copies available to subscribers from University Microfilms, Ann Arbor, Michigan.

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Second-class postage paid at Chicago, Illinois, and at additional mailing offices. *Postmaster: Send address changes to Journal of Library Automation, 50 E. Huron St., Chicago, IL 60611.*

EDITOR'S NOTES

Goodbye JOLA

It is with mixed emotions that we note that this is the last issue of the *Journal of Library Automation*. The first issue appeared in March 1968, just shortly after this editor had graduated from library school. Under the editorships of Frederick G. Kilgour and Susan K. Martin, *JOLA* established itself as a major source of information about developments in library automation.

This is also the last issue of the first volume produced by a new editorial board. The current editors are especially indebted to Eileen Mahoney of ALA's Central Publication Unit, whose experience, patience, and wise counsel contributed materially to making this last volume one we are all proud of.

Hello ITAL

Please welcome volume 1, number 1 of *Information Technology and Libraries* when its bright new face appears on your doorstep in March. It will look very familiar to you. The new name reflects many of the shifts in emphasis that have gradually been introduced in recent years as changing technologies have encouraged a broadening of *JOLA*'s original scope.

We plan to introduce some minor changes to increase *ITAL*'s utility, but see these as evolutionary. We continue to solicit comments and suggestions on how the journal can better serve your needs.

Synchronicity

In our September issue, we initiated a new section, "Reports and Working Papers," in which we reproduce documents we believe deserve a wider readership than their original distribution. We were amused to note a similar innovation in the August *Bulletin of the American Society for Information Science*. We would welcome comments on the usefulness (or wastefulness) of the new section.

Standards

Standards continue to be a major concern in our field. We hope those of you involved with acquisitions systems will find the communications by Sandy Paul and Jim Long in this issue useful. We encourage you to participate in standards development efforts when possible. Please try to use developed standards whenever they are applicable to your work. The ISBN, SAN (Standard Address Number), SLN (Standard Library Number), and other standard numbers will become increasingly important as our systems become more interdependent in this shrinking world.

Libraries and Information Services in a Post-Technological Society*

Maurice B. LINE: British Library Lending Division, Boston Spa, England.

Technological imperatives will produce major changes in society in the future, as they have in the past. Post-technological society will affect the way we work, where we live, and how we spend our leisure. Changes in educational and research directions and in publishing and information delivery will affect the role and shape of the library of the future.

This paper covers ground trodden by several papers in the last two or three years. Its only justification is that it approaches the matter from a rather different angle than most, and that it may help to stimulate debate and, possibly, concerted action. It asks questions to which only tentative answers are given, and opens up issues that are left as loose ends. Readers can work out their own answers and tie up the loose ends in their own way. It is the questions and issues that are important—so important, and so urgent, that they cannot be ignored without great peril.

THE POST-TECHNOLOGICAL SOCIETY

By "post-technological society" I do not mean a society in which technology has fulfilled all that could be asked of it (and probably more than many want of it) and has no further use. I mean a society in which technology, specifically *electronic* technology, is fully integrated and accepted, but as the servant of society. It is not hard to find examples of society serving technology, or at least of technologists, and those who make money out of technology making other people serve it (or them)—just as in the Industrial Revolution people served machines, had their personal and social lives organized around machines, and were forced into a different way of living by machines. We are still feeling the effects of the massive changes brought

*The views expressed in this paper are those of the author and do not represent those of the British Library. A version of this paper was delivered at the ALA Annual Conference in San Francisco on June 29, 1981.

about by the Industrial Revolution, but some countries, at least, have long reached a stage where they are no longer dominated by industry, and others are suffering from an actual decline in industry which may prove irreversible in the long term. To me a post-technological society means one that has gone *beyond* technology and progressed to the concept of society for society's sake. Since such societies will be attained much more quickly in developed rather than in developing countries, this paper is concerned with the former. The latter raise different and extensive issues which deserve separate discussion.

This paper will be at least as concerned with the social framework as with the role of libraries and information in a future society, since libraries and information cannot exist in a vacuum and must be geared to the society we have. They can respond to changes, often after some delay, as has happened too often in the past, or they can anticipate them, or they can perhaps influence them.

My own picture of a possible, and by no means improbable, future will be an optimistic one, in that I shall assume that no major wars or major social revolutions occur—only a gradual, but eventually massive, change.

ECONOMIC SHIFTS

The decline of heavy industry has been happening for a long time, even if allowance is made for the fact that some of its decline in developed countries has been caused by exporting it to developing countries. Big things are still made, but they are no longer made manually, since much of the heavy work has been taken over from men by machines—machines, moreover, that do not even have to be minded by men. Some industries are more amenable to this kind of change than others, but few if any industries are unaffected. These changes are being greatly accelerated by electronic technology.

Since there will be less work and economic growth will be slower, nil, or negative, the disposable income of the average citizen will increase slowly, remain steady, or decline. This will reduce buying power and affect production.

There has been a huge switch from production industries to service industries, which have absorbed many of the personnel freed from production industries. The service industries themselves are now being subjected to automation and this time there will be nowhere for people to go for jobs. The Western world may or may not achieve continued (or resumed) economic growth. If it does, it will be achieved largely by automated means. Some jobs will be created, but far from sufficient enough to replace all those destroyed. Without economic growth—and no economy can go on growing for ever—no jobs will be created. The question is not, therefore, whether but how fast jobs will be lost. Whatever measures may be taken to alleviate it, the loss of jobs will happen and the sooner we adjust to the fact the better. Jobs are being lost, now, in most of the developed world. It is

later than we think, and planning and action are needed urgently.

A WORLD WITH LESS WORK

There are various ways in which the loss of jobs might be dealt with. One possibility is not to deal with it at all. The results of a do-nothing policy would be that a very large proportion of the population would be unemployed, and after a time unemployable because they become unused to working, and the gap between the rich and poor would extend to an unbridgeable width. The social and political dangers of such a situation are obvious: it could be controlled only by a system that would be dangerously near to a police state. The alternative is anarchy.

A positive alternative is to deliberately create work, in order to have full or near-full employment. Since there will not be enough necessary work, most of the work created will be strictly unnecessary. Some socialist states do this. Competition and enterprise are stifled, and awareness that their work serves no useful purpose can hardly satisfy those doing it. This is true even when systems are almost entirely manual; the problems of creating work when there is even less that needs to be done will be enormous. Technology could of course be ignored and systems left unchanged, in which case hard and unpleasant work will continue to be done by people—work that could be done automatically. This could also be a cause of dissatisfaction.

Another alternative is to spread work around more thinly, so that, in effect, everyone works part-time. This solution requires full cooperation from the work force, and workers with full-time jobs have, to date, given no indication that they will behave altruistically.

We shall probably see a mixture of all these solutions: more people totally unemployed, more people working shorter hours than now, and some deliberate creation of work. Whatever happens, a lot more people will have a lot more time on their hands—except psychiatrists.

The work that will exist will be mostly skilled, and much of it will be highly skilled. Unskilled labor will be little in demand: this is the corollary of the otherwise wholly welcome decline in unpleasant work. It is incidentally a sad reflection on modern society that little attempt has been made to apply modern technology to some of the nastiest, dirtiest, most labor-intensive jobs such as garbage collection—presumably because the workers in question have less say than middle-class housewives, much of whose time is now spent in waiting for labor-saving devices to be repaired.

SOCIETAL DECENTRALIZATION

Information technology will make our present huge conurbations unnecessary, and they will no longer exert a magnetic attraction because they will have no more work to offer than smaller communities, including probably small rural communities. Much work will be capable of being done without traveling to it. We may see a revival of small towns, on a

truly human scale, where people know one another and feel some sense of responsibility to and for one another. Indeed, conurbations, many of which are historically amalgamations of small townships created largely by the Industrial Revolution, may break up again into small townships. Social life in such communities can flourish.

Huge industrial plants will not be necessary either. That is not to say that there will not be huge industrial concerns, but they will be able to consist of a network of small units, which can be semiautonomous and widely scattered. Within units, smaller groups can have their own identities. Since people find it very hard to relate to large numbers of other people from day to day—fifty is about the maximum meaningful grouping—this trend, which is already occurring in forward-looking industries, is entirely beneficial. It will make communication within firms, which is often lamentably poor at present, even more important.

A move from big cities to townships and other smaller communities, and the independence of distance provided by information technology, should lead to much greater local and regional self-sufficiency. More social self-sufficiency would certainly be expected, but political self-sufficiency, in the form of greater independence of national or state government, could also develop. There tend to be fashions in centralization and decentralization, and the recent trend towards decentralization may not last in the face of international tensions. The balance will always be a difficult and shifting one, but technology should enable national identity and purpose to coexist with a high degree of regional and local autonomy.

The need for balance between the state and smaller groups will also become greater as most Western societies come to be more and more multicultural, not to say multilingual. The cultural needs of minorities will have to be reconciled with the fact that they are part of a larger community.

ALTERNATIVE LIFE-STYLES

There are signs that some of the social changes suggested are already taking place. Beneath all the superficiality and sheer silliness of many "alternative" movements in psychology, politics, social life, etc., it is not hard to detect a deep and widespread desire for a less competitive, less aggressive, less exploitative, and less polluted society—one less dominated by industry and the profit motive. This desire, ill defined though it may be, is surely felt by many who play no part in these minority movements. We should incidentally remind ourselves that not all dropouts are failures: many could have succeeded in our society if they had wished and tried. There are signs of changes in education, too. Academic pressure on school pupils in Japan may have increased in recent years, but it has decreased in many countries, including Britain, partly because schoolchildren themselves have a different view of the future—less optimistic than in the past, but certainly less aggressive and self-seeking.

Optimistic faith in technology generally is a thing of the past, except for those directly involved in technological developments. A feeling almost of despair on the part of many people, due partly but certainly not solely to technology and its misuse, is leading them to take up extreme positions. This is a dangerous trend: society rarely progresses by extremes or fluctuations between them. If mindless opposition to technology can be redirected to careful thought as to how technology could be used to benefit society, and if those who appear to have total faith in technology could bring themselves to think more of its social function, not only would the pro- and antitechnology split be healed but both sides could work toward a common end.

NEW EDUCATIONAL NEEDS

The economic and social changes outlined above will obviously create a need for very high skills on the part of a few. Skills of a lesser order will need to be much more widely disseminated, and some knowledge of electronic technology should be universal. The educational system will need to gear itself to this, not only during childhood and adolescence but during adulthood as well, since much of the population will need reeducating, maybe several times if not continuously.

Other educational needs are less obvious. One of the reasons why the idea of a society where there is less work horrifies us so much is that we have been brought up to worship work. Work worship is deeply ingrained in us—not surprisingly, as the prosperity of the Northern Hemisphere (and more especially, the northern part of that) has been built on the Anglo-Saxon Protestant work ethic—originally work to keep oneself warm, work to save one's soul, work to create wealth—and ultimately work as an end in itself. The right to work is in itself an odd phrase—why not the right to be idle? Because the right to be idle sounds immoral; laziness is one of the worst sins. I suspect sloth is probably rated, deep down, as the worst of the seven deadly sins—most of the others are fun, like gluttony and lust, or generally accepted as human weaknesses, like pride and envy. Historically, work worship is recent, and geographically it is not widespread. There will be no point at all in inculcating the work ethic in a society where there is not very much work. Instead, there is much to be said for inculcating a play ethic, or at least a leisure ethic. There will be a lot more leisure, and if soul-destroying work is not to be replaced by soul-destroying leisure, people will have to learn to enjoy it and use it positively. In the early stages this will require major efforts, because it will be unnatural both to the work worshippers and to the next generation of work shunners.

Since continuous expectations of an ever-increasing standard of living cannot be sustained, people will also need to be educated for contentment. They will have to learn to live more in the present, and there will need to be a certain degree of acceptance that things are as they are, economically at least. The hope that somehow, sometime, improved income, housing con-

ditions, or whatever will make people happy will have to be abandoned. This does not of course mean an Oriental fatalism or a cessation of efforts to improve people's well-being; it does mean that these efforts should be personal and social rather than economic. A recognition of this can again be seen in the burgeoning of self-development and social growth movements, though many of these are too inward-looking, not to say egocentric, to be of much social value, even if and when they actually work.

PLANNED LEISURE

Leisure will need to be carefully planned if it is to take the place of work in satisfying some basic human and social drives. It will have to absorb energies, mental, physical, and social. It is interesting to note how mankind, as his society progresses well beyond the stage where it depends on hunting, shooting, and fishing, increasingly occupies his spare time in hunting, shooting, and fishing—and since these are often expensive pursuits it is those who are highest up on the economic scale who go in for them most. Both individual and social leisure activities will have to be planned and provided for. Individual leisure activities will of course include not merely mind-occupying (and mind-stultifying) things like *Space Invaders* but intellectual and artistic pursuits. Social activities, which will also be intellectual and artistic as well as sporting, will be especially important in the smaller communities we may hope to see replacing conurbations, especially as much work will no longer need to be done in groups and will take place in isolation—some of it at home. Individually and socially, the performing arts will gain in importance, and the development of creative talents of all kinds, from the making of furniture to the making of poetry, must be encouraged.

My earlier use of the term “necessary” in relation to work begged several questions. Some work is necessary to keep people alive, but merely being kept alive is hardly a sufficient objective for humankind: *Man Cannot Live by Bread Alone*. Other kinds of activity than work are equally necessary for a reasonably satisfactory human existence. This is recognized already to some extent, indirectly rather than specifically, by the increasingly large amount of work created by the leisure industry. Note the terms “work” and “leisure industry”—we even have to fit leisure into our work-oriented, industry-dominated ethos. In my (perhaps rather idealized) society the artist is as “necessary” as the coal miner, the sportsman as the government official.

EDUCATION FOR FUTURE SOCIETY

The tasks of education for future society are numerous and formidable. As well as meeting the continuing needs for scientific and technical knowledge and skills, education must educate people for leisure. This education must be both “positive” and “negative”—“positive” in developing social,

physical, intellectual and artistic skills, "negative" in the sense that training for the rat race must be superseded by personal development for contentment. Certainly the present tendency of the educational system to stifle creativity and originality at an early age must be eliminated. All this is a very tall order, and to meet it may require radical changes in the system. Above all, the idea that education begins in infancy and ends in middle or late adolescence should be abandoned, because the kind of education needed in the future must be available at all ages. Education must be literally a continuous process, not a separate and definable chunk of life.

There is no reason why all education should be left to professional educators. Not only should people be encouraged to educate themselves, but they can educate one another. These processes go on all the time, of course, but they would benefit from some planning and professional help. The generation of educational materials—"educational" in the broadest sense—will be a major activity.

GOVERNMENT AND PROFESSIONAL INFORMATION NEEDS

Government, whether national, regional, or local, will have a massive and increasing need for information. Much of this will be of a technological, political, and economic nature, as it is now. If there is more local and regional autonomy, and some cultural autonomy, some of this information will be concerned with coordination, holding together as a nation a society that could easily become fragmented. Information will have to flow from, as well as towards, the center. The main dangers are that government's needs will be so huge that the information system will be designed primarily to serve them, possibly neglecting other needs; since much of the information transmitted to and generated by government will never appear as print-on-paper (POP), access to it will be almost impossible unless it is deliberately provided. Freedom of access to printed information is far easier to ensure and monitor than freedom of access to closed information stores. At the same time, access could be made much easier if governments so desired. This must be ultimately a political judgment, and will undoubtedly be a political issue: for better or for worse, politics and information will be even more inextricably mixed than now.

Service occupations, such as the medical profession, will also have a massive and increasing need for information, which should not be confined to any narrow specialism, such as surgery, but should encompass social aspects. Many wrong tacks have been taken because the context in which they were adopted was too narrow: a good example of this is the planning and building of high-rise flats. Such errors, which are colossally expensive in social as well as economic terms, are due partly to a failure of imagination but also to an insufficiently broad body of information; future doctors and planners working on a problem must be made aware of the wider framework of that problem. At the same time the background and

nature of their plans and decisions must be made publicly available: they must convey information to the society they serve, abandon their mystique and expose themselves to public scrutiny. For this to be useful the public must have some understanding of what is being conveyed.

CHANGING RESEARCH DIRECTIONS

Development research will continue to be as important as it is now, but there will be much less fundamental research in science and technology because the funds will not be there, and such fundamental research as is carried out will tend to have its origin and inspiration in problem solving—the problems set by government and industry, and, one must hope, society. The cutbacks in basic research we are seeing on both sides of the Atlantic, especially in academic institutions, are unlikely to be a temporary phenomenon. The cutbacks may be made by governments for economic reasons, but there is little resistance to them, partly because of a widespread public suspicion of science and technology. Research will of course still be done because some people like doing it and will have access to the necessary facilities, but there will be less of it, and it will become even more interdisciplinary than now—or rather, the present boundaries will give way to quite new ones, and science will be structured differently. Restriction of money and facilities will curb scientific and some social science research, but it need not seriously hamper research and private study in the arts and humanities, and in a leisured society one would expect the balance of research to shift substantially toward these subjects.

If my diagnosis and forecast are even approximately accurate, then we shall see a society in which there is less work, much less hard work, and shorter working hours; in which conurbations and large industrial concentrations are unnecessary and smaller communities and plants may take their place; in which there will be less centralization; in which services will grow and interact much more with the people they serve; in which fundamental research in science and technology will shrink, but private research in other fields will grow; in which, above all, there is far more leisure, and hence far more scope and need for leisure activities of all kinds. If we are wise, we shall adapt and develop education toward this sort of society; and in the process much education will be de-institutionalized.

INFORMATION AND LIBRARIES

All up to this stage is really an extended prologue to the setting of information and libraries in a broader context. I do not propose to spend long on likely developments in information technology, since it is becoming almost impossible to pick up even a newspaper without reading something about them. The vision of the “paperless society” is held out before us as an unavoidable and desirable ideal. Those who advocate such a society seem to me either naive or deliberately misleading. They speak as if all

published literature were scientific and technical journals or report literature and as if all readers were involved in research and development. This is patently not the case, and if my predictions are correct scientific and technical literature will come to constitute a diminishing proportion of published material.

The advocates, moreover, appear to assume patterns of reading behavior—where, when, and how people read—that can hardly be widespread. For example, it is doubtful if many people read most books, apart from novels, in a linear fashion from the first page to the last, or read for long continuous periods, or do most of their reading, whether for the purposes of work or leisure, in only one or two places. I certainly do not, yet a system of “publication” based on electronic transmission and reception on a screen would impose these restrictions on me. My reaction would be the same as with microfilm—to get a legible hard copy as soon as possible to read when, where, and how I like. Unless very high quality receiver/printers are used, my copy may be legible but it will be much inferior to what I am used to, so that the new media will merely be an expensive way of producing inefficient old media. There will be even more paper around than now; it will simply be produced in vast quantities at the receiving rather than the producing end. Nor do I believe that economics favor, let alone necessitate, the electronic transmission of most published material: if enough copies of a document are produced at the receiving end it may even occur to someone that centralized production and distribution would be more efficient, and the book would be reinvented. The POP culture is likely to be with us for some time yet.

Are the paperless prophets offering yet another example of trying to do something because it can be done, of giving technology priority over society, which then has to adjust to the changes that technology has brought about? The adjustment would have to be not only individual but political, because paper is a democratic medium in that it can find its way almost anywhere it can be read, whereas electronic communication will tend to be elitist both within and between countries, widening the already huge information gap between developed and developing, rich and poor, north and south. The future will surely be a mix of more or less conventional publications—many of which may be produced from machine-readable versions by computer phototypesetting—and of electronically transmitted information—some of which will end up, and be distributed, as printed matter. Technology should be used to extend the range of media available, not reduce it, and it is more sensible to consider who needs what information before deciding that one mode of provision is inevitably best.

NEW CONCEPTS OF PUBLICATION

Nevertheless, the changes will be profound. The concept of “publication” will need to be redefined; it certainly cannot be confined to a printed document, or to any physical object at all. There will be no permanent

archival form of many items, since the electronic originals of papers can readily be corrected, updated, or even deleted. (Incidentally, the danger that this will give governments or others the ability to control information and to reinvent the past as well as adjust the present cannot be ignored, and in an open society there must be strong safeguards). Some (by no means all) journal articles and reports, dictionaries, encyclopedias, and various kinds of handbooks are well suited to electronic storage and transmission. The contents of these materials too will be subject to frequent change.

Although most published material is likely to continue to appear in a more or less conventional form, the fact that much of it will be produced from a machine-readable version will mean that it need never go out of print because copies can always be produced on demand. So long as the electronic masters are kept somewhere, there will no longer be a need for permanent paper: books can be disposable objects. They have been regarded as disposable by many individuals for a long time—books are a rare example of an object which is consumed but after consumption is still there unless thrown or given away—but libraries have generally deplored self-destructive paper and research libraries have avoided disposal whenever possible. If and when existing printed matter whose content is significant can be captured and converted to machine-readable forms, conservation efforts can be directed to works that should be preserved in their original form because of their artistic and literary value (*Paradise Lost* just doesn't look the same or communicate the same message in a seventeenth-century edition as opposed to a computer printout). Luckily, many such works were printed before the quality of paper began to deteriorate.

A leisured society, educated to entertain itself and to create, will produce more media, written, visual, and aural. Written media can of course simply be handwritten and duplicated for local distribution and use, and one would devoutly hope that most will stop at this stage. It will not be difficult, however, for authors to input their writings on word processors, and once they have done this there is, in theory, nothing to stop them from being added to larger files. Book publishing has always been a rather uncertain business, but at least somebody somewhere has had to make a decision on whether a given book was worth publishing. Who decides, and how, whether a book, or a short story, or a poem, is "worth" putting into a nationally accessible database? Will there be an equivalent of the book publisher in the form of a database provider, who may concentrate on a certain type or range of material and who will exercise some quality control over input? Or will input be relatively uncontrolled, and the control be exercised by the consumer, who will decide whether material and how long material remains accessible? There are obvious dangers in the latter. Similar considerations apply to research literature—whether and how input will be controlled, or whether and how control will be exercised by users. What does seem clear is that it will be very difficult to prevent rubbish getting into the system—even more than happens now.

BIBLIOGRAPHIC CONTROL

In any case bibliographic control will be essential. Bibliographic control over conventionally published and printed material is far from complete or perfect, and this has not always mattered because there has been visual and physical exposure to the material itself. But with a closed store of information this kind of exposure is impossible. Solutions in the case of research literature should not be hard to find: most of it is readily indexable and exposure is important mainly for keeping up-to-date with general developments in and around one's specialty. With other kinds of literature, exposure may be achieved by means of television and videotex.

It is clear that while POP will continue to be published as now, it will increasingly be supplemented, and in some sectors supplanted, by alternative media. Alternative media will include videocassettes and sound recordings of various kinds as well as surrogates for POP. Some of the information on alternative media will be ephemeral—though no more than much present printed material—but much of it will be of long-lasting, if not permanent, interest. This will be especially true of the unprinted word—matter that would today be published as a journal article or report, but tomorrow may be accessible only electronically. The strange concept that appears to be held by many librarians that everything printed has permanent value and must be preserved while other communication media are largely disposable will become untenable (as it should already be—many books are of far less value, even as ephemera's of interest to future social historians, than many films or television programs).

HOME INFORMATION SERVICES

One obvious trend is that most homes in Western society will have (as they have now) television sets, and also videotex adaptations. Many homes will also have their own computer terminals. The average home may be poorer in real terms than now, but such equipment will be cheap and commonplace. In one way or another, many individuals will be able to call up a great deal of information without having to leave their houses, and some will be able to print it out.

It looks then as if there will be a greater volume of information generated at all levels, from government through academic and research bodies to individuals, in a wide variety of forms, with imperfect bibliographic control and only limited quality control. The information will range from that needed and generated by management, through research papers, to material produced for leisure—for the enjoyment or amusement of others or the satisfaction of the creator. Much of this information will be available on television, much on machine-readable databases some of which will be accessible in many homes, and much in conventional POP, which because it need not be permanent can be produced very cheaply and hence made available to a wide market.

In this situation, the workers will be able to obtain the information they need for their work either at a place of employment where others work or at home if their work is such as can be done at home, whether online or from printed paper produced at a terminal. Their leisure needs, and the much greater leisure needs of the increasing numbers of unemployed, will be met by television, including videotex and videocassettes, and by cheap throwaway POP. So will their education needs—and I suggested earlier that education will involve many more people as educators as well as learners, that it will be lifelong, and that its strictly functional element will be limited and less socially important than its leisure element.

INFORMATION SUPPLIERS

Some of the information will be produced by government and made available as a public service if not a public necessity. It may or may not be supplied by the government, and even if it is, it may not be free. Some information will be produced by amateurs, whether groups or individuals, at their own initiative and expense—but access to it may still be paid for, partly depending on how it is supplied.

Some information will be produced for no direct payment (like research papers), but will be commercially supplied. Much will be both produced and supplied for profit. To state the obvious, someone will have to pay for the supply if not the production of all kinds of information, and if it is supplied electronically, particularly in direct response to demands, the costs cannot and will not be concealed. This would not need stating if much of the information supplied by and through libraries at present were not detached from any costs and prices. It has of course been paid for at one stage, usually from public or institutional funds, but uses are not paid for, and the consumer very rarely pays anything. This very point has, of course, led to the campaign by authors and publishers for so-called public lending rights and for photocopying fees. There are various answers that can be made to the arguments put forward, but most of these will be irrelevant to much information in the future because the supply of information, for each and every use, will be in the producers' or suppliers' hands and under their control. If they want to sell, say, a videodisc to an institution on terms that permit subsequent use without payment to them, that will be their decision—but in such cases the initial sale price will hardly be small.

WHERE DO LIBRARIES FIT IN?

Where might libraries fit into future society? The need for current recreational reading will be supplied (as now) largely by disposable paperbacks. Needs for publications of the past will be capable of being met directly by on-demand printing from a machine-held database, or possibly from microform. Reference needs, fulfilled at present largely by directories, handbooks, encyclopedias, etc., will be met online, probably through television screens. Research needs will be satisfied largely through commercial data-

base operators, selling printouts or computer time. Libraries are intermediaries in the communication of information, at best transmitters: if intermediaries are less needed, and transmission is done in other ways, where do libraries come in?

Should libraries wait and see how things develop and then see what they can do about it? Should they try and influence matters at an early stage—if so, how, and is it already too late? Should libraries become producers as well as intermediaries? Should patrons be charged? All or some? If some, where should the line be drawn? The questions are agreed, but no one knows the answers.

Librarians who consider these matters tend to start from the assumption that public and other libraries exist, that they will still be supplying POP, and that the main issue is whether they add electronically accessible information to their services. An alternative approach would be to start with the “null hypothesis” that in the future libraries will not be needed—not even to supply books—and then to consider the best means of making information available in various forms. If the best means turns out to include something like libraries as we know them, at least they will be based on more secure foundations.

THE INFORMATION UNIT

In institutions such as industrial firms and universities there will almost certainly be an important role for an information unit—important if only because there will be such a quantity and variety of information, available in so many ways, that an access and control unit will be vital if users are to acquire the information they need and to acquire *only* the information they need—sipping or drowning, both inferior to a decent drink, will both be possible without expert help. Since conventional POP will still exist the information unit may as well acquire and provide that as well: note that the unit will be adding POP to electronically accessible information, not vice versa. A large store of books will be unnecessary, since only those needed fairly frequently need be kept for long; others can be obtained on demand as required. As well as remotely accessible information and POP, there will be local information stores held in electronically accessible form, whether built up locally or acquired as electronic packages (such as video-discs or tapes containing the future equivalent of journals). The unit will supply both information, orally or on paper, and POP, much of which will be generated at terminals. There will of course also be local access points within an institution of any size, e.g., the chemists will have direct access to chemical data. The unit will have one very big advantage over local terminals in that it will be able to afford machinery to produce far higher quality POP.

The unit must also be able to supply remote workers, since many will not need to come into the institutional buildings regularly. The institutions will pay all necessary fees for the use of information, since their staff will

presumably be using the information for the purposes for which the institution employs them. Whether the unit itself pays or whether it charges departments of the institution is a minor issue.

Information, in its widest sense, for the public is a rather different matter. Or is it? There may be terminals and screens at home, but the same problems of diversity and quantity of information sources and media will exist, perhaps on an even larger scale. There is no reason why there should not be—indeed, it is fairly certain there will be—various information suppliers, some of them competing with one another. The question is whether there is a place for a publicly-funded service embracing a wide range of information sources and media, and if so what form it should take. In the public interest, and ultimately in the national interest, ready access to official information should be provided, but this information could still be made available at home: a physical unit open to the public, on the lines of today's public libraries, would not be necessary.

The same applies to other information sources: there is a strong political and social case for a publicly-funded guidance unit, and probably also a supply unit, though it would not always be easy to decide when the supply costs should be carried on public funds on the grounds of public utility. A very strong case can be made for free, or at least heavily subsidized, access for deprived sectors of the community, but borderlines are no easier to draw here than elsewhere. Some people will have no television and no money to spend on books, and for these there could be places that were open to the public and where free and direct access could be provided. In this case the future equivalent of the public library would become a sort of information flophouse.

COMMUNITY CENTERS

Another approach is more promising. The growth and importance of leisure have been stressed several times in this paper. At first it will be enforced leisure, but one can also expect more voluntary, guilt-free leisure. It will be a matter of the utmost importance to provide leisure centers—on public funds, because the unemployed will not be wealthy. These would be community centers that would serve the functions of self-education and mutual education, creative activities, and individual and group recreation. All of these will need access to information of different kinds, and most of them will generate information as well. An information unit will therefore be an absolutely essential part of the community center. Some information will be produced for (and often by) groups rather than individuals: listening and viewing, retrieving and assessing information, are often better done in groups than individually. The Pompidou Centre in Paris may be more forward-looking than even its originators thought. Since the identity and coherence of the community will be very important, there will of course be no question of restricting it to one sector. Issues of

who pays for what will still have to be resolved, but this will be a community decision.

In other words, something rather like the public library will have to be reinvented—but it will be necessary because it is vital to serve society, not because it happens to be there already. It would be rash to prophesy that community centers will be an inevitable element in future society, but it is hard to see how otherwise society can respond intelligently and humanely to the changes it will undergo. At the least, community information service and integration with education and leisure seem a more than worthy objective for the public library or its future equivalent. It is, moreover, an objective that the public library is in a good position to help achieve: it can give a lead as perhaps no other public service can. Finally, it is an objective that is as applicable to developing as to developed countries. The concept of a worldwide network of community information units is very attractive, and may not be as Utopian as it seems at first.

NATIONAL CENTERS

Has all this future-gazing anything to do with national libraries? This is another question that I would turn round, and, instead, ask, What national library/information service will be needed to serve future society? This question is too big to discuss just now. However, one function seems fairly certain—that of acting as a backstop reservoir for permanent storage and supply, in support of all the local and institutional units. This function will have to be applied selectively, and selection will be one of the most difficult problems to handle. To avoid corruption of records, they should be stored in a more “fixed” form than volatile electronic media—paper, perhaps? Bibliographic control—also selective—may also be a function, though the national center’s role here may be mainly one of coordinating and standardizing rather than generating records.

Since the frontier between publishers and librarians, already subject to occasional frontier disputes, will become more and more fluid, and since both producers and disseminators are working towards a common end, separated only by the need to recover costs or make profits, not only should a truce be called between the parties but they must form an alliance. This will inevitably be somewhat uneasy—only a dead marriage has no tensions or conflicts—but continued warfare will incur penalties not only for the parties themselves but for society.

LIBRARY EDUCATION

Finally, and briefly, what kind of training will be needed for our future intermediaries? Even today I would like to see a much more broadly based course than conventional library education normally offers, one that is concerned with communications rather than librarianship and information technology—“communications” to include the whole field of publishing, bookselling, advertising, and communications technology. Future ed-

ucation may need to be broader than this. Since such a course could not possibly be contained within three or four years, and since much of it anyway is relevant to much of the population, it would be diffused, spread over a large number of years, starting in childhood and continuing through life. The educators too will need to be diffused—we should all be educating ourselves and one another and it should no longer be a question of administrators retiring to stud in their latter years to produce people in their own image. Where expertise and special training will be needed is in information analysis and coding, even though one would hope and expect much of this to be done directly by the computer through analysis of the full original text.

CONCLUSION

Who will decide what happens? Not the technologists, one must hope, nor any sort of elite; though opinion may need to be led, this is different from decision making by a few for the many. Libraries and information people should obviously have a major say, and they may have to represent their users, present and potential. This implies that librarians must be fully integrated with the society they serve—just as doctors and planners should be, but so rarely are, integrated with the people they are supposed to be serving. Information, as perhaps *the* major national resource of developed countries in the future, must never become the domain of “experts”. A massive and continuing process of discussion, leadership, and consultation with information users—most of them ordinary people—is necessary, and should begin now. Leadership of social trends is not a common or natural characteristic of the library and information profession, but it is desperately and urgently needed.

The post-technological society, to conclude, should see libraries and information services totally integrated into society in a way that we are only beginning to glimpse today. The implications of this are much more profound than this paper indicates, and the whole future system needs to be thought through in depth. If there is a single main message in this paper, it is that a technological vision alone is hopelessly incomplete, that librarians and information people must at all costs avoid the planning disasters that narrow-thinking, well-meaning experts have scattered so liberally around us, and that they can take a positive lead not only in developing libraries and information services for the future society but in helping to shape that society.

The Use of Automatic Indexing for Authority Control

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Thesaurus-based automatic indexing and automatic authority control share common ground as word-matching processes. To demonstrate the resemblance, an experimental system utilizing automatic indexing as its core process was implemented to perform authority control on a collection of bibliographic records. Details of the system are given and results discussed. The benefits of exploiting the resemblance between the two systems are examined.

INTRODUCTION

It is not often realized how close the relationship is between automatic indexing using a thesaurus, on the one hand, and automatic authority control, on the other. Making the connection is worthwhile for many reasons. The first has to do with terminology. Though one would be naive to hope for a reduction in specialized vocabulary, it is helpful to appreciate that what is called a thesaurus in one application is referred to as an authority file in the other; that the two have virtually the same structure, similar working parts, and play the same role in controlling the content of fields in a bibliographic file in their creation and, at least potentially, during retrievals by users.

A second reason emerges in system development. Below we discuss the various ways that a library can implement authority control. They range from a fully manual system, where the authority file exists only in card form, to online, automatic authority management. There are intermediate points as well. For each of the automated implementations, the system investment in software can be great. Recognition of the close parallel in function of these two library needs allows for parallel development of software for any of these stages.

A third reason looks to the future. Successful system-patron interaction

ought not to depend upon a patron's knowledge of the authorized entry forms currently in use for a library. First, the concept of a controlled vocabulary is far too narrow: authority control should encompass *all* fields available for searching. But the patron need not be aware of complicating details: substitutions of recognized variants for authorized forms ought to be carried out automatically during patron retrievals (with due regard, of course, for the intent of the patron).

This article describes a project in authority control in a specialized system environment, one that is increasingly typical in many of its features. The file of records is relatively small, currently below 10,000, and has a potential for growth not exceeding 100,000. The collection, derived from the Annabel Morris Buchanan Collection of American religious tune books at the University of North Carolina (Chapel Hill) Music Library, has many similarities with standard book collections, but its details vary greatly and cataloging conventions have been developed locally. Its use for scholarly research is similar to that for any standard collection of bibliographic records.

A great many such nonstandard collections exist—the morgue file in a newspaper, machine-readable data files, even properties marketed by co-operatives of real estate agencies. Developing automated retrieval systems for such collections are similar enterprises, sharing similar goals and problems. In particular, all require extensive authority control similar to that required by a tune-book collection.

The important feature of the method of authority control described here, one that makes it likely to be of interest to others, is its use of the same structures and software that are used for general vocabulary control. The three major software components we will refer to below are: thesaurus maintenance, automatic indexing, and automatic updating. These components antedated our effort to implement a similar system for authority control. When the problems that dealt with authority control per se were investigated, it was discovered that the system already available for subject control could be used exactly as it stood for authority control as well. Initial experiments confirmed this relationship.¹

Authority Control and Automatic Indexing

Automatic authority control has been approached largely as a unique problem requiring special software development for its implementation. But authority control shares common ground with automatic subject indexing. Both are term-matching activities based on a list of preferred terms plus a much larger list of match terms. Each preferred term is tied to a number of match terms, but each match term is tied to only one preferred term. In the indexing environment, document text is examined for certain terms; these "free text" (uncontrolled vocabulary) terms are tied to equivalent (controlled vocabulary) terms in a thesaurus. When an uncontrolled vocabulary term is encountered in a document, its associated controlled

vocabulary term is posted to the document as a descriptor. In authority control, document text is also examined for certain terms, e.g., author names. These "free-text" author names (i.e., names just as they appear on a title page) are tied to their authoritative name form (controlled vocabulary) in an authority file. When a "free-text" author name is encountered, the authoritative name is posted to the document or book (i.e., assigned as a heading or entry point).

An automatic authority control system, then, is realizable by applying standard automatic subject-indexing software, which exploits the resemblance between the two processes. The input would consist of a thesaurus (in this case, an authority file) and bibliographic records; the indexing discovers matches between the list of possible terms in the thesaurus (variants of author names) with the "free-text" terms (title-page author names), and posts the appropriate controlled thesaurus terms (authoritative author name form) whenever a match occurs. (See figure 1.)

THE TUNE-BOOK PROJECT

An experimental version of an authority control system using automatic indexing was implemented to test the feasibility of automatic indexing as

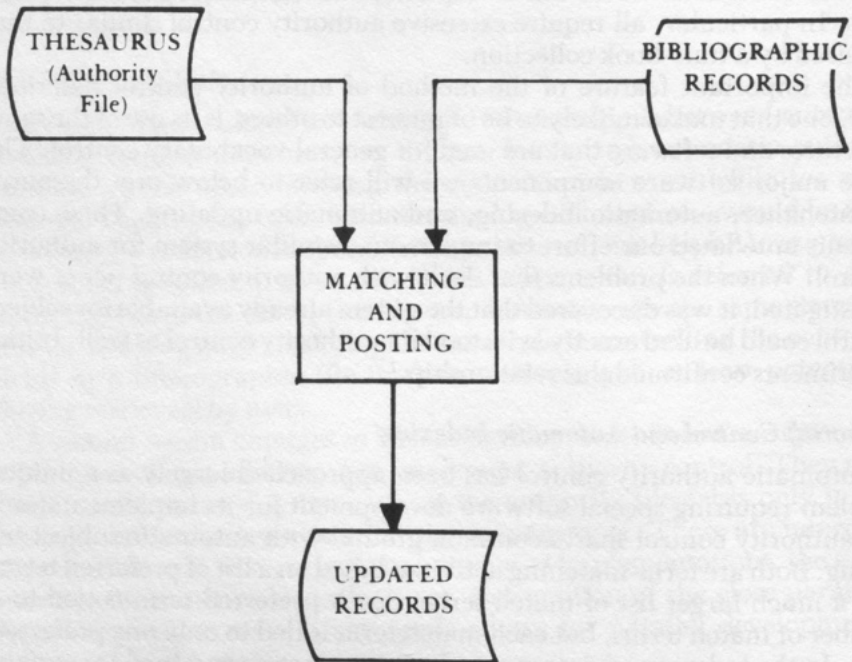


Fig. 1. Authority Control by Indexing.

the core process for authority control. The goal was automatic authority control for the Buchanan Collection index, the first step in work on a more comprehensive project, an index of American religious tune books, in particular, the shape-note tune books.

For the study of American cultural and musical history it is important to be able to trace the dissemination of these hymn tunes and texts, but the absence of a comprehensive index of American hymn tune books severely constrains such studies. Many factors have discouraged scholars from constructing an index, among them the magnitude of the repertory. Using computers to sort, file, and print reduces many of the problems associated with the size of the repertory, but does not address those created by the diverse forms of names and texts used by the tune-book compilers. Correct hymn titles and especially accurate composer attributions were not important to the compilers of the tune books. Consequently, although many tune-book compilers *did* attempt to indicate who had composed the work, the names of the composers appeared in various forms. For example, the name "Israel Holdroyd" might appear as simply "Holdrad" or "Holdrayd" with no first name given, or a first initial might be added, or an abbreviated first name, such as "Is." might be used with one of several forms of the family name. Automatic authority control over these names is necessary to the study of this collection, since only automatic means can address the problems of magnitude encountered in approaching the index as a whole.

The database now contains about 6,000 records for these tune books. They are stored in MARC format with variable-length fields giving a variety of information about each tune.

Creation of the Authority File

A thesaurus of authority records for the Buchanan Collection was manually created and placed in an online file. The initial authority file comprises a selection of composers whose names are present in conflicting forms in the present database. These were obtained by analyzing the file sorted by tune names, noting those tunes for which it appeared that the name of the same composer was given in more than one form. All forms of the name found were entered on cards along with the name of the tune (or tunes) through which the relationship was established. We used an explicit algorithm as a guide in determining which names were actually forms of the same name (see appendix for details). This process resulted in a list of 266 distinct composers, each with one to four different name forms. All were compared with the list sorted by composers, noting additional forms. These names were then checked in several reference works, and authoritative forms (with dates) were established when possible.

IMPLEMENTATION

Software Systems

File processing for the tune records and the authority thesaurus was

accomplished using a local software product, Bibliographic/MARC Processing System (BPS). BPS is a general-purpose software package for the manipulation of MARC-format records. This experiment used BPS subsystems for creation of MARC-format records, sorting and formatting, and file updating (i.e., updating a master file with the contents of a transaction file).

The automatic indexing program used here was intended as part of a thesaurus-based document query system.² It is compatible with BPS, but utilizes generalized automatic indexing principles—its compatibility depends only on properly formatted thesaurus and bibliographic records. It includes file-processing programs for the thesaurus (authority file) and the bibliographic records (tune records) and a matching program that performs the indexing. Posting of the authoritative name forms to the proper MARC record is done with standard BPS updating procedures using output from the matching program.

Automatic Authority Control Process

As input the system uses a thesaurus and the text of fields selected from MARC-format document records. The thesaurus consists of pairs of terms: the first of each pair is the term searched for in a document, the second is the authority term assigned to the document, whenever the first term is found. Figure 2 gives examples.

The text may be abstracts, titles, or the contents of any field selected from the documents for authority control. In this case, the text is derived from the composer field; for authority work in general, any field requiring authority control would be input.

The first step in authority control is as follows. The text sample and a stop-word list are input to the initial text-processing program. The incom-

VARIANT		AUTHORITY FORM
Cole, J.	/	Cole, John 1774-1855
Clarke, Thos.	/	Clark, Thomas
Coles, Geo.	/	Coles, George
Cuzens, B.	/	Cuzens, Benjamin
Ball, S. B.	/	Ball, R. F.
Holrad	/	Holdroyd, Israel
Holroyd	/	Holdroyd, Israel
.		.
.		.
.		.

Fig. 2. *Thesaurus/Authority File Format.*

ing text (in this case, composer names) is separated into individual words. The stop-word list is used to remove designated words from the input, which in authority control might be titles of address and so on—terms such as “Miss,” “Elder,” or “Reverend.” (Automatic indexing uses the stop-word list to eliminate similarly noncontributory terms, such as conjunctions and prepositions.) The processing program can also convert plurals to singulars if desired. The purpose of this option in automatic indexing is to pare down variants in order to increase matches by standardizing term forms. However, plurals are not converted in authority control, since names are usually distinguished from one another by their full forms. The processing produces a list of individual terms. Each term is given once along with the number of words in the term, then broken up with the document number attached to each piece.

The thesaurus authority records are edited by the thesaurus processing program into specially formatted matched pairs of variant and authoritative forms. Input is the match-term/variant-term file (figure 2) and the same stop-word list used for document processing. The stop-word list eliminates all unwanted words in the list of variant name forms. Output is a file containing all possible name forms (variants), the number of terms in each name and their positions in the name, and the authoritative name form, as in figure 3.

Next the two files are used as input to a matching program that creates an inverted file of the processed document text, then compares each match term from the prepared thesaurus with the inverted file. A match is discovered according to one of the following criteria:

1. *Exact match*: Match term and document term are the same words, in the same order, and adjacent.
2. *Stop word exact match*: Words are the same in match term and in document term, and in order, but deleted stop words may intervene between words in the document term.
3. *Any order match*: Term must be the same words and adjacent (i.e., without intervening words) and may be in any order.

VARIANT	#WORDS	RELATIVE POSITION	AUTHORITATIVE FORM
Hastings, Thos.	2	1 2	Hastings, Thomas 1784-1872
Hastings, Thos Dr	3	1 2 3	Hastings, Thomas 1784-1872
Holdrad	1	1	Holdroyd, Israel
Holdroyd	1	1	Holdroyd, Israel
Houser, W	2	1 2	Hauser, William 1812-1880
.	.	.	.
.	.	.	.
.	.	.	.

Fig. 3. Processed Authority File.

4. *Stop word any order match*: Terms must have the same words and in any order, but intervening stop words are ignored.
5. *Any match*: Any word of the match term may be in any part of the document text in any order.

These match criteria are similar in intent to the criteria for deciding composer-variant forms/composer-authority form match mentioned above and presented in the appendix. An interesting possibility is to use such match criteria to discover variant author name forms in creating the authority file, since many variant forms result only from misspellings, title attributions, and so on. Pseudonyms would not be detected, but such a procedure would be useful in collating forms morphologically similar.

The experiment used criterion two, one of the most restrictive; the "free-text" composer name must match exactly and with its parts in the same order (except that stop words, such as "Miss" or "Elder," may intervene) as the variant author name before an authoritative form is posted. This seems the most reasonable choice for this project; presumably more flexibility could be achieved by adding criteria to the match process or by allowing Boolean combinations of criteria analogous to those outlined in the appendix.

The final output from the match module is three files: a print file of all match terms, a file of all unmatched authority names, and a file constructed for the update of the bibliographic records, giving the document and field to be updated and the update term.

The print file is a record printed for each term matched. The record gives the variant form matched, its field type, the proper authoritative name form as given in the thesaurus, and the identifier numbers of the documents in which the term is found. Field type is an identifying code assigned to each term in the prepared thesaurus, not necessarily the same as those identifiers in the MARC-format authority file; here, the field type is Preferred Composer Name (PCN). An example of the printed output file is in figure 4.

The update file is for use in an update program that posts the authoritative name form assigned by the indexing. It contains the document identifier number in which a match was found, the field type of term found (PCN), and the authoritative name form. The update program uses this file to add the authoritative composer name form as a new bibliographic data field to the appropriate bibliographic record, assigning as a field identifier the field type identifier accompanying it. Figure 5 gives the new records with added fields.

During the update process, a file containing all records *not* receiving a new authority-name field is generated. These records may contain a new variant of an authoritative name already in the file or a name altogether new to the file; in either case the unmatched author name would have to be added to the authority file and tied to an authoritative name form. The output also assists in tracing erroneous name-form assignments.


```

MATCH TERM: Walker           TYPE: PCN
AUTHORITY TERM: walker, William 1809-1875
LOCATIONS: AA-1059, AA-1144, AA-1273,...

MATCH TERM: Davidson        TYPE: PCN
AUTHORITY TERM: Davisson, Anaias 1790-1857
LOCATIONS: AA-1035

MATCH TERM: Handel          TYPE: PCN
AUTHORITY TERM: Handel, George Frideric 1685-1759
LOCATIONS: AK-1045, AA-2093

MATCH TERM: Everett         TYPE: PCN
AUTHORITY TERM: Everett, E. G.
LOCATIONS: AA-1015, AA-1090, AA-1105, AI-1023, AK-1060,
           AK-1111, AI-1397...

MATCH TERM: Pond            TYPE: PCN
AUTHORITY TERM: Pond, Sylvanus Billings 1792-1871
LOCATIONS: AB-1054, AB-166Q, AD-1248, AQ-1336, ...
           .
           .
           .

```

Fig. 4. Update File.

Results

Table 1 gives some statistics on the experimental runs. In the 5,788 bibliographic records, 760 distinct composer names were present, the remainder (one composer per record) being duplicate forms; many of these are simply "anon," where the composer was not known. Earlier test runs on a subset of the file had fewer duplicates, and additions to the full database show few new composer name forms. Thus the database is nearing a stable state with an exhaustive list of composers; this stability contrib-

Table 1. Implementation Statistics

File Statistics:	
Total number of bibliographic records	5,788
Number of composer names in biblio records	760
Average number of compositions per composer	13.2
Total number of authority name forms (in authority file)	266
Total number of variant and authority names (in authority file)	599
Run Statistics:	
Total number of variant thesaurus names matched	372
Total number of variant thesaurus names unmatched	213
Average number of documents per matched term	5.87
Average number of documents per term	3.61
Total number of records updated by authority form	2,110

DOC ID:	AF-1147
ANTHOLOGY:	The Union Harmony
IMPRINT:	selected by George Hendrickson
TUNE NAME:	jerusalem
FIRST LINE:	Jesus, my all to heav'n is gone,
PCN:	Walker, William 1809-1875
COMPOSER:	Walker, Wm
DOC ID:	AA-1353
ANTHOLOGY:	The Sacred harp
IMPRINT:	by B. F. White, E. J. King [and D.P. White]-- 4th ed.---Atalanta : D. P. Byrd, 1870
TUNE NAME:	the hill of zion
FIRST LINE:	The Hill of Zion yields,
PCN:	White, Benjamin Franklin 1800-1879
COMPOSER:	White, B. F.
DOC ID:	AB-1100
ANTHOLOGY:	The Dulcimer
IMPRINT:	or, The New York collection of sacred music / by I. B. Woodbury. --- New York : F. J. Huntington
TUNE NAME:	Carson
FIRST LINE:	Jesus and shall it ever be,
PCN:	Bradbury, William Batchelder 1816-1868
COMPOSER:	Er, W. B.

Fig. 5. Updated Records.

utes to decreasing errors and fewer unmatched composer names in the automated authority control process.

The total number of thesaurus records matched applies to variant forms, authoritative forms (matching occurs for these also), and for those few forms that have no variants. The unmatched terms (213) are largely variants not in the database but gleaned from reference sources in anticipation of their occurrence, and authority forms, most of which do not occur in the database. The 2,110 matched represent the total number of composer names matched of the original 5,788 names. Most of the unmatched names are the "anon" entries (more than 2,000); the remainder are unanticipated forms not detected in the initial manual construction of the authority file. These unanticipated forms become new variants added to the authority file as described above.

CONCLUSIONS

Automated authority control as presented here has a number of advantages, either for libraries with their own processing facilities or for the management of information collections outside the standard library environment. Unifying the processes of subject control and authority control by using the same procedures and software for both simplifies the tasks of

systems personnel and information managers. Where catalog access is online, the patron benefits by applying subject access facilities to other searches. Ideally, substitutions for all variants would occur automatically, accompanied by an alert to the patron where it was felt necessary. At a minimum, the same command structure would be available for referencing names as would be normally available for consulting an online thesaurus. In either case, the difficulties of the patron are reduced, both in comprehending how the system works, and in acquiring a facility for using system commands.

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APPENDIX

Rules for Decisions on Similar Names

The following conditions may exist:

- A = identical tune name
- B = identical surname
- C = identical first initial
- D = same first letter of surname and close match of the rest of the surname. (55 percent match of letters in content, not in order. Such a similarity is presumed to represent a similarity in sound.)
- E = similar tune name (same criteria as in D for percentage of match). EXCEPTION: words "new" and "old" cancel any presumed relation between similar tune names.
- F = information in CMP subfield x field is identical in content

The following combinations of conditions indicate the same person, expressed in decreasing order of reliability:

1. A & B
2. B & C
3. A & D
4. C & D
5. B & E
6. C & D & E
7. D & E
8. F & (B or D)

Note: points seven and eight are regarded as tentative, and matches using these combinations are flagged for later checking.

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Circulation Systems Past and Present*

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A review of the development of circulation systems shows two areas of change. The librarian's perception of circulation control has shifted from a broad service orientation to a narrow record-keeping approach and recently back again. The technological development of circulation systems has evolved from manual systems to the online systems of today. The trade-offs and deficiencies of earlier systems in relation to the comprehensive services made possible by the online computer are detailed.

In her 1975 *Library Technology Reports* study of automated circulation control systems, Barbara Markuson contrasted what she called "older" and "more recent" views of the circulation function. The "older" or traditional view was that circulation control centered on conservation of the collection and recordkeeping. The "more recent" attitude encompasses "all activities related to the use of library materials."¹

It appears that this latter outlook is not as new as Markuson had suggested. In 1927, Jennie M. Flexner's *Circulation Work in Public Libraries* described the work of circulation as the "activity of the library which through personal contact and a system of records supplies the reader with the [materials] wanted."² Flexner went on to characterize four major functions of circulation as follows: (1) The staff must know the books in the collection, and have a working familiarity with them. (2) The staff must know the readers; their wants, interests, etc. (3) The circulation staff must fully understand the library mission and policies and work harmoniously with those in related departments. (4) The circulation department

has its own particular duty to perform. . . . Effective routines and techniques must be established by the library and mastered by the staff if the distribution of books is to be properly accomplished and the public is to have

*This article is adapted from a speech delivered at Rutgers University.

the fullest use of the resources of the institution. The library must be able to locate books, on the shelves or in circulation; to know who is using material and how the reader can be traced, if he is misusing or unduly withholding the books drawn.³

The function of circulation has not changed since Flexner's description. Even within the context of online circulation systems, it is absolutely essential that the circulation system be seen in as broad a context as possible. It is not merely an electromechanical phenomenon staffed by automaton-clerks. Circulation services involve that function which is ultimately one of the most fundamental: the satisfactory bringing together of the library user and the materials sought by that person.

It follows, then, that the mechanism and means of delivery and control of the service are only a small part, and certainly not the most important part of the circulation function. Knowing your collection, your readers, and clearly knowing your library's mission are crucial prerequisites for the effective circulation of library materials.

An examination of the history of circulation systems and their evolution to the present state reveals the change in outlook from a narrow view of the circulation function to a broader view.

Let us begin by establishing the basic elements of record keeping, upon which circulation control is based. There are three categories of records:

1. For the collection of materials, books, tapes, microforms, etc., comprising the library.
2. For the readers or users of the library service.
3. For the wedding or concatenation of the first two, i.e., the library user's use or borrowing of the library's materials.

A minimal circulation model is a set of procedures or recordkeeping with respect to only the third category, i.e., records of the materials held by the library user outside of the library. A total or complete system would then be one that provides for all three categories. Using these criteria to judge the level of control provided by the various circulation systems of the past, let us review.

The earliest method of circulation control was the chain method. In this case, "circulation" is not an accurate term; "use" of materials is more appropriate, as the collection did not circulate. Books were chained to the wall and the user did not take the material outside of the library. The minimal circulation model is not met, and records were not required.

Several hundred years later, the ledger system's first iteration involved a simple notation into a ledger. The identification of the book—call number and/or author and title—and the borrower's identification were recorded. Upon the return of the book, the borrower or the receiving clerk initialed the ledger entry or otherwise indicated the return of the item. Minimal circulation control is met.

A more developed or sophisticated ledger system exceeded this minimal circulation model. The new ledger had each page headed by a different

borrower or registration number. Consequently, a given user had all of his or her charges recorded on the given page indicated by the user's number. The economy of not having to write the borrower's name for every transaction was made possible through the creation of a file of patron records linked to the ledger page by common registration numbers. In effect, this was our first "automation." The use of a master file in support of a numbered page provided information that had previously been handwritten every time someone wished to borrow books from the library.

The new ledger system also allowed for a more orderly control of charges. Only the borrower's number was needed to get at the page of transactions relating to that borrower, as opposed to the former method—a benchmark method, in a sense—in which the transactions were chronologically entered and had no other ordering whatsoever. Even with the improved ledger system, though, the only ordering was by borrower number and date of issue to the borrower. There was no arrangement that provided for sequencing or finding the books borrowed.

The need to identify borrowed books led to the *dummy* system. Every book had a concomitant dummy book (or large card) that had a ruled sheet of paper with the book identification information on it and the borrower's name and/or number. When a user wished to borrow a book, the dummy was pulled from a file and the borrower information was written on the sheet of paper. The dummy was then filed on the shelf occupying the space formerly occupied by the book itself. When the book was returned, it was reshelved, the dummy removed, and the circulation transaction was crossed out.

This system is interesting in that it provides for a complete inventory control. Either all items are on the shelf in proper sequence or a physical surrogate or record for circulating items is substituted and placed in proper sequence. One has instant and, in effect, "online" access to the presence or absence of materials if one has the call number and can go to the shelf. Unlike most systems that can only tell whether or not the book is present, the dummy system tells who has the book and when it was charged. In terms of a minimal model, this system provided less and more than the ledger system. If a reader wanted a list of books he or she borrowed, the reader would have to view every dummy and see if the listed item was charged to him or her. In contrast, the ledger system served such a request well, though every page of the ledger might have to be examined to find out who had borrowed a book not found on the shelf.

Leaping past several systems, let us now discuss the Newark system, the overwhelmingly prevalent system in the United States today (if we include the mechanical or electromechanical versions of Dickman, Gaylord (the manual, not automated), and Demco).

The Newark system incorporated the best features of the systems already mentioned. A separate registration file was kept which provided both alphabetic access by patron and numeric access by patron registration

number. Consequently, the recording of the borrower's identification during circulation transactions only involved the notation of the number. For book identification, a card and matching pocket were placed in each book with the call number and/or author-title identification information. The circulation transaction involved the removal of the card from the pocket and the entering on it, a la dummy system, the date of the transaction and the borrower number. The cards for all of the books borrowed on a given day were aggregated and filed in shelflist sequence in a tray headed by the date of the transactions. Resorting to computer jargon, the major or primary sort of the book cards (read circulation cards) was by date, but the minor sort was by call number. Consequently, if one wanted to know the status of a given book and one had the call number, it would not take too long to search, even with a file as large as the one in the main branch of Newark Public Library, by looking for the item in all of the different days' charges.

When a book was returned, the clerk noted from the date-of-issue card inserted in the book's pocket, the tray in which to search, and the matching call number on the pocket which was used for discharging the book, i.e., removing the charge card from the tray and replacing it in the book.

The combination of the books on the shelf plus the cards in the different trays in shelflist order constituted a complete inventory. Additionally, the trays of cards comprised a comprehensive record of all current charges, i.e., all transactions by date, call number, and borrower, with borrower number pointing to fuller information in the registration file.

Looking back at our basic model, the Newark system offered not just the minimum—a record of the item and the borrower who took it—but also introduced a major step toward inventory control. There was an inventory sequence involved, or, more accurately, several inventory sequences—one for each given collection (or day) of circulation transactions. What was still missing was a record by borrower of what was charged to him or her. In the original Newark system, the borrower's card had entered upon it dates of issue and return of items. This way, even if the library could not tell the user what items (s)he had, the user's card would reflect the number of items outstanding.

The handling of reserves, renewals, and overdue notices occurred as follows: a colored clip or some indicator on a circulation card would be used to indicate a reserve. A renewal would be handled the same as a return except the person would wait while the charge card was pulled from the appropriately dated tray, and assuming that no reserves had been placed on the circulation card, the book would be recharged (i.e., renewed) to the borrower. Overdues automatically presented themselves by default. Cards left in a tray after a predetermined number of days represented charges for which overdues were to be sent. The tray was taken to the registration file and the numerically sequenced registration cards for the delinquent borrowers removed so that notices could be prepared and sent. Then the

registration slips and circulation cards had to be refiled at the completion of the process.

Essentially, most subsequent systems are variants on the Newark system. The McBee key-sort system involves the use of cards with prepunched holes around the edges, one of which can be notched to indicate the date an item is due. The cards are arranged by call number creating a single sequence. The insertion of a knitting needle-like device through a given hole will allow all of the books overdue for a given date to fall free of the deck. This system is like the Newark system in that it has inventory and date access, but unlike Newark it places a horrible burden on the borrower. Each card has (written by the borrower) the borrower's name and address and the call number, author, and title of the book. Thus, the library is saved the labor of creating circulation cards and maintaining registration records for every patron—all of the information needed is on the charge card. But here, as Marvin Scilken has pointed out, the burden of the library's tasks are merely passed on to the users. This point should be emphasized.

The next system to be considered is the photo-charge system. Microphotos are taken of the borrower's card, which has the name and address on it, the book card (as in the Newark book identification card), and a sequentially numbered date-of-issue or date-due slip. Again, as with the McBee, since the photo record includes the borrower's name and address, one can throw away registration files. Also, a list or range of transaction numbers is kept by date used. Since the numbered date-of-issue slip is placed in the book at the time of charging, and one removes it when the book is returned, it is a simple step to cross off or remove the number on the slip from its corresponding duplicate on the list of numbers for that day's transactions. Overdue transactions are found by searching for unchecked transaction numbers on the numerically sequenced microfilm.

This system does meet the criterion of the minimal model, a record of the user's use of the item. In terms of labor intensity, one has eliminated the maintenance of charge-card files and registration files by a single microfilm record. Reserves, though, are terribly time-consuming with the photo-charge system: each returned book, before it can be returned to the shelf or renewed, must be searched against a call-numbered sequence of reserve cards. Academic libraries would not use this kind of system because call-number access is a necessity, especially in relation to recalls of long-loaned items. The elimination of paper files is what so commended this system to public libraries over the Newark-based systems. But, as was noted, one has virtually no way of determining who took a book out or when it is due back except, in principle, by searching all of the reels of microfilm.

Some variants on this microfilm system were developed. Bro-Dart marketed a system that thermographically produced eye-readable records instead of microimages.

Such was the state of circulation systems before computers began to be used. The following—a discussion of the involvement of computers—can

be separated by the type of hardware: main frames, minicomputers, and microcomputers.

The main-frame computer has been used primarily in the past as a processing unit for batches of circulation transactions collected and fed to it via punched cards, terminals, or minicomputers.

Call number and author and title (albeit brief) and user identification number, were captured for each transaction. In the 1960s and into the early 1970s, this information would be batch-processed by the computer and a variety of reports would be produced. What the computer does, then, is keeps track of numbers, their ranges, and the dates of the ranges. But the computer can do much more than this. It is capable, as none of the nonautomated systems were, of rearranging the data input and then comparing and tabulating them as desired and appropriate.

Consequently, the fact that the call number, author, and title are stored by the machine means that lists or files can be arranged by any of these elements. The same goes for date of transaction. As to borrower identification number, a master file much like the Newark registration file is kept (only now in its machine-readable form), and the computer does the comparing at high speed instead of the clerk taking the charge record and going to the numeric file to find the name and address of the borrower. Of course, the computer can then readily and quickly print out overdue notices with an obvious absence of clerical support and labor intensity. As we all know, the rate of increase of labor costs is increasing, and the rate of increase of computer costs is decreasing.

Two kinds of large computer systems have been used. The batch-oriented one, which either kept track of items in circulation only (the absence system—only items absent from the collection were tracked), or one that kept track of the entire collection (the inventory system).⁴ Normally, identification numbers were used for patrons in either system.

Although relatively rare in academic and public libraries, the main-frame-based online system is also in use. Ohio State University is famous for its online system. What is meant here is that all transactions are immediately recorded and all files are instantly updated. Printing is still necessary for overdue notices, but printed circulation lists are not necessary because of the online answers to queries regarding books or patrons now possible through terminals distributed to appropriate locations.

The minicomputers came on the scene in two stages. CLSI's entrance in 1973 utilized one of the early minicomputers, quite small by today's standards. For relatively small libraries that had not begun to dream of having their own computers, it became possible to have an entire inventory (in abbreviated form) and an entire patron file online. Consequently, all of the access power of the Newark system, and none of its labor intensity, was available online and much more besides. Few libraries could afford the main-frame system of Ohio State, but many could pay for CLSI's, and indeed they did.

In the last few years, minicomputers have grown several magnitudes

above the capacity and speed of main-frame computers of the 1960s. Consequently, such firms as Dataphase, Systems Control, GEAC, Gaylord, and others offer these larger minis, which can now support online the needs of large branch systems with inventories of hundreds of thousands of books. Incidentally, CLSI, with a new mini line, can do this now as well.

Both the mini- and maxi-based systems do all of the basic work originally outlined: the whole inventory can be accessed online or with printed lists arranged by author, title, or call number (and, presently, some vendors offer online subject access and cross-references); access can also be made by patron's name. Further, the basic transaction—item, borrower, and date—is recorded and checked for holds or delinquency before it is accepted.

Without overly extolling the present state of the art, it should be said that all of the information identified as important in the earliest systems is now not only available in a far quicker and more usable fashion, it can be manipulated by the machine in a variety of ways to meet and serve management objectives not considered practicable in the past. Peter Simmons showed how collection development could be aided by automatically generating purchase orders when reserves exceeded a specified acceptable level.⁵ All kinds of statistical data regarding collection and patron use can be generated that could not have been possible in a manual mode. While at the University of Southwestern Louisiana, William McGrath was able to adjust book budget allocations in terms of collection use and undergraduate major in a most interesting fashion.⁶ The net result was an empirically based expenditure of book funds.

Now the microcomputer or microprocessor is the newly emerging phenomenon, and in many respects it is not unlike the minicomputer of the early 1970s. It is being used to perform single data-recording functions, and is also being seen as the link to the larger computer.

So we have moved from chained books to microcomputers the size of a desk top. Originally, a great deal of information was captured at great expense and laboriously maintained. Certainly the handwritten and typed records of the Newark system, although relatively comprehensive, were obtained and preserved at great cost. And, despite it all, there were real limitations of access. The succeeding McBee and photo-charging systems appreciably cut out-of-pocket costs to the library, but either passed labor directly on to the user, or eliminated access altogether. Book or patron access are virtually impossible with the photo-charging method. Simply put, that system tells what is overdue, and that's all.

The entry in the 1960s of the computer radically altered the ground rules. Now all sequences of encoded elements are possible, and management information can be derived. Important statistical data pertaining to collection use and library users can be obtained by further manipulating the data accumulated in the circulation process. It is now possible for all but the smallest and the very largest libraries to have access to and control

of their materials through the current range of minicomputers on the market.

Jennie Flexner told us that circulation had to be more than maintenance and record keeping of loan and borrower transactions. Through the advances of the computer technology and its application to circulation control, we have finally seen what seems to be an optimization of the record-keeping process and, by extension, an improvement in circulation service. If instantaneous access to patron files, inventory files, and outstanding transaction files through a variety of modes and computer-developed management data does not constitute that optimization, it will have to do—until the real thing comes along.

ACKNOWLEDGMENT

The author is deeply indebted to Susan E. Bourgault for her editorial assistance.

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Communications

MARC Format Simplification

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This is a summary of a paper written on the consideration of the feasibility as well as the benefits, disadvantages, and consequences of simplification of the MARC formats for bibliographic records.¹ The original paper was commissioned in June 1981, by the ARL Task Force on Bibliographic Control as one facet in exploring the perceived high costs of cataloging and adhering to MARC formats in ARL libraries. The conclusions and recommendations, however, are entirely those of the author and the opinions and judgments stated here result from a wide-ranging canvas of technical services people, computer people, and/or library administrators. Because the MARC format has so many uses, the paper is divided into five perspectives from which the MARC format can be viewed: history, standards, and codes; present purposes; library operations; computer operations; and on-line catalogs.

The Library of Congress has already begun a review of the MARC format and has distributed a draft document.² The general thrust of that review is a close examination of the MARC format in an attempt to begin to lay the foundation on which revised MARC formats can firmly stand—particularly in regard to content designation (tags, indicators, and subfield codes used to identify and characterize the data explicitly).

As that review deals with the very specific, this paper aims generally at attempting to paint with broad strokes a picture of today's MARC in its many relationships, benefits, costs, and what the impact would be to the whole from any change to the part.

PERSPECTIVE: MARC HISTORY, STANDARDS, AND CODES

Relationships

The original MARC format document established conventions for encoding data for monographs. Though it was understood that early applications were going to relate to the production of catalog cards, the MARC designers looked ahead to an increasing emphasis on data retrieval applications. Other design considerations included, for example, the necessity for providing for complex computer filing, allowance for a variety of data processing equipment, and an attempt to provide for some analytical work (more specific description of contents notes or other types of analysis).

Later the single MARC II format was transformed into a series of formats, and as time passed, those formats became inextricably tied to other developments at the national and international levels: The International Standard Bibliographic Descriptions, the Anglo-American Cataloguing Rules, 2d ed., UNIMARC, the National Level Bibliographic Records, and the National and International Communications Standards; e.g., ANSI Z39.2-1979 and ISO 2709.

Benefits

The benefits of the MARC formats and other standards and codes have been substantial both philosophically and pragmatically. The sharing of cataloging records through the computer-based, online networks have been shown in a variety of cost studies to have contained the rate of rise of per unit cost. A further benefit of the MARC formats is the momentum its creation gave to the steady movement toward standardization which can benefit individ-

ual libraries in a number of ways: first, bibliographic information can be exchanged among libraries and countries. Second, in recent years we have moved steadily toward creating an environment in which the Library of Congress would become one of many authoritative libraries thus enhancing the shareability of records.

Costs

The early costs of the development and implementation of the MARC formats were borne by LC (aided by Council on Library Resources funds). LC continues to bear most of the costs of MARC formats, such as new MARBI proposals, duplication and distribution of documentation, and so forth. Direct investment of library dollars came through the purchase of the MARC tapes and the development of systems to receive, process, and output data in MARC formats.

Impact of Change

Throughout the years of its use, the MARC format content designation and content rules have been augmented or modified. In the beginning, however, databases were small and changes could be absorbed more readily. The number and complexity of the formats have increased, as have the interrelationships of the MARC formats with other standards and codes resulting in a present environment in which the impact of change is felt more strenuously.

PERSPECTIVE: PRESENT RELATIONSHIPS AND CONSTRAINTS

Relationships

Today's close interrelationships between the MARC formats and other codes and standards affect both library and computer operations. Though, for example, the general International Standard Bibliographic Description was implemented by the library community prior to the adoption of AACR2, the second edition of the rules has firmly incorporated the ISBDs. When this format description system is combined with the machine-based MARC formats, some ISBD information will be supplied by humans and some generated by programmed machine manipulations.

As a second example, in the last couple of years, the Library of Congress has spearheaded the development of National Level Bibliographic Record(s) which define the specific data elements that should be included by any organization creating cataloging records which may also be shared with other organizations or be acceptable for contribution to a national database. As the logical idea of a national database comes to fruition, it is necessary for the MARC format to provide for greater specificity in the coding of originating library, modifying library, and so forth.

Benefits

The benefits of the use of the MARC format continue to lie in the ease with which bibliographic information can be shared and the concomitant beneficial impact on cost control. In addition, the MARC format supports a host of other standards and codes and the benefit from these relationships has been consistency in and fostering of standards development. In the bibliographic arena, the more that standards are developed—locally, regionally, nationally, and internationally—the more we will be able to transmit and share bibliographic data, thus controlling the costs of original cataloging. On the other hand, we also "pay" when we standardize.

Cost

The two costs associated with increased standardization are additional time and thus cost required to meet standards, and the increased expense of maintaining local practices which may often be idiosyncratic. In relation to the latter, while many local idiosyncrasies are often unnecessary and counterproductive, there are generally some which have become an integral part of a large catalog database or upon which a major procedural activity is based. But, to benefit from compliance with standards, increasingly we will move away from local practices.

In terms of the time required to adhere to the MARC format, it is possible to continue to utilize the format (or participate in systems that use it) and yet control the amount of complexity with which one has to deal. Both AACR2 and National Level Biblio-

graphic Record documents allow for "levels of description" which provide for more or less description; and various online networks allow, in a similar manner, for limited input standards.

As we view the array of standards and codes which together make up today's bibliographic scene, we can see that each of the separate elements is consistent within itself, is understandable, and counts for only a portion of the costs associated with the cataloging process. The combination of elements, however, begins an accretion of complexity that for most requires an effort of organization and education in order to control work flow and meet standards.

Impact of Change

Because the MARC format is closely interwoven with a number of national and international codes and standards, changes to the format would have implications far beyond the local library. At the very least, discussions would have to involve a host of individuals and groups, all at different stages of development and implementation based upon the present MARC format.

PERSPECTIVE: LIBRARY OPERATIONS

Relationships

In the library-operations perspective, any operations related to the MARC format have to be viewed as only one of many elements which must be interfaced with daily work flow. Let us look, for example, at the amount of time which might be expended in a typical large academic library by cataloging personnel in training and ongoing work activities required in MARC-related operations.

In those libraries which obtain access to cataloging databases as members of networks, contact with the MARC format is filtered through the standards, requirements, MARC implementation design, documentation and other related training facilities of the network. Libraries which maintain their own databases do the same kind of filtering, though staff may have somewhat more control of the user cordiality of the interface. The shared networking environment, however, generally seems to imply more standards and requirements be-

cause of the attempt to guarantee as much "shareability" as possible.

Libraries participating in OCLC, for example, must train staff in the following codes: AACR1; AACR2; standard subject heading codes; standard classification codes; OCLC/MARC formats for each type of material being cataloged; OCLC bibliographic input standards; OCLC Level I and Level K input standards; OCLC systems users guides; in some instances, input standards documents for regional or special-interest cooperatives; local library interpretations, procedures, and standards.

Any close review of the time library staff expend in the use of these tools for either training or ongoing operations reveals that MARC per se requires only a limited proportion of a typical library staff person's day. While training may be intensive at either the beginning of a person's job or at the beginning of work with a new type/format of material, this portion of the cataloging unit cost is small.

Benefits, Costs

In the cataloging activity, the benefits from the use of the MARC formats are at least two: first, the MARC format as part of an online cataloging system permits the machine-production of catalog cards at a major savings over manual production. Second, access to a shared cataloging database permits the use of "clerical" catalogers at an estimated unit cost saving per book of twenty dollars when compared to "original" cataloging.³ Third, depending upon the information available in the cataloging record, the time required for decision making during the cataloging process can be decreased significantly.

Impact of Change

It was the general consensus of the technical services people I contacted that simplification of the formats through the consistent assignment of tags would make training and introduction to new formats somewhat easier, but that any savings of time would probably be trivial. There was no consensus that either simplification or shortening would result in any significant time or cost savings.

To a certain extent, the use of the very

specific MARC formats has made the descriptive cataloging process (and the training to undertake it) clearer in that the logical relationships and description of the data elements are so clearly exposed through the assignment of tags and other codes. Also, once initial familiarity with the format(s) is achieved, ongoing use becomes second nature. It is also possible for cataloging staff to control the complexity with which they will deal through the use of less than "full," but still nationally acceptable levels of cataloging and, hence, MARC coding.

Finally, most technical services people believe that cataloging and maintenance activities in libraries have always been complex, requiring long and detailed procedures and intricate work flow. While membership in networks requires new skills and knowledge, it is the sum of the whole rather than the difficulty of any single portion which affects unit costs today. Changing the MARC format through either simplification or shortening would have only a slight effect on the total technical services operation and costs.

PERSPECTIVE: THE COMPUTER OPERATIONS ENVIRONMENT

Relationships

In looking at computer operations, there are at least two major subdivisions: operations that serve only one client (e.g., a library system serving itself) or operations that serve many clients (e.g., RLIN or Blackwell/North America). The constraints differ for each operation and are further complicated by whether or not the computer operation must be able to produce as well as accept bibliographic records in a MARC format.

Each computer facility, for example, can have distinct operating software depending upon the type and mix of computing equipment used. In addition, each computing facility translates the MARC-formatted records into an internal processing format which may differ extensively from MARC. Too, further tailoring may be done for batch processing as opposed to online operations and computer operations which serve a single user may not have to re-create records in the MARC format and may even

more radically redesign the MARC-formatted records for internal use.

As changes to the MARC format occur over the years, each computer system will write additional software to incorporate those changes into the then existing system. In some instances, it may be too difficult to attempt to convert old databases to reflect changes in MARC coding, and there will then exist an "old" database and a "new" database for that particular MARC field or subfield. Since changes have occurred in many fields, most databases are an amalgam of new and old interpretations (this is true in relation to cataloging codes, too) of MARC coding, and original internal software design may reflect the same type of patchwork quilt.

Operating these computer systems is complicated, in addition, by the fact that a wide range of user library needs and desires must be accommodated. Indeed, a report prepared by Hank Epstein for the Conference to Explore Machine-Readable Bibliographic Interchange (CEMBI) revealed after an exhaustive review of the use of MARC data elements that there was no data element not used by someone!⁴

Benefits

Benefits that accrue to computing operations as a result of the MARC format include the use of what was called "a pretty decent general communications format," which facilitates communications, card/COM production, and online information retrieval. As a communications format it is as coherent as any other structure for carrying bibliographic data. Because the format allows for a very specific level of detail in description, computing operations can supply a variety of products to fill a variety of needs.

Costs

While specific cost information was not available for inclusion in this paper, discussion does reveal some widely held generalizations. First, the MARC format does not seem to be any more complex or costly to use than other variable field communications formats. Beginning programmers are generally introduced first to the internal communications format of their particular

computing system, and when they come to the MARC tags rapidly become familiar with the coding through experience. Indeed, if the programmers know the structure of and have a specification for the format, they can work with that format even though they may be unfamiliar with it from the users' point of view. Thus, the format itself, and training in its use does not seem to be significantly costly.

Second, every change in the MARC format requires some programming effort and may or may not require concomitant changes in the database. The consensus of the computer people with which I spoke was that the sophistication and specificity of the MARC formats was a good thing, but the inconsistencies among formats is problematical. The benefits of consistency can be important, but to justify changes financially, the major changes should be done at one time. Indeed, most individuals doubted whether or not there was sufficient capital in these straitened times to be able to implement consistently a major MARC format change—and this is from the perspective of both the operations serving one and many users.

Impact of Change

Without a philosophical and practical framework (or benchmark) against which to compare the benefits and costs of alternative solutions to MARC format maintenance issues and without a better and more comprehensive description of the requirements of the internal processing formats of the computer operations, it is difficult to assess clearly the costs and benefits of MARC format changes. It does seem to be the case presently that, once established, computer operations can deal with the complexity and specificity of the MARC format without undue ongoing financial investment.

The strength of the MARC format for computer operations lies in its specificity. For the batch processing environment especially, the MARC format is a reasonably efficient format and one that facilitates development. Its inefficiencies are not drastic and its specificity buys valuable flexibility. Severe cuts or major simplifications would be a mistake since discontinuing specificity is a one-way street—once it is gone, it can-

not be retrieved. The ability of the machine to assist in editing is weakened by the loss of specificity and it then becomes more difficult to edit out poor data. Simplification through consistency, rather than shortening, would produce the most beneficial impact—though it must be done carefully to be cost beneficial.

PERSPECTIVE: ONLINE CATALOGS *Relationship*

The major difficulties facing us when we attempt to discuss the relationship of the MARC format to online catalogs is that, first, we know so little about how people think when they use our card catalogs; and, second, we have so little experience with how those thought and use patterns might change when the online catalog replaces the card catalog. Another aspect of online library system development is the combination of subsystems such as acquisitions, serials control, or authority control with the online catalog and the implications of such a combination for system design, the internal processing format, and compatibility with the MARC format.

The index design of most large online catalogs or information retrieval systems today relies upon precoordinated search keys in order to facilitate the large sorting activities that have to occur. The second indicator in the 700 field, for example, is designed for the purpose of formulating search keys, filing added entries or for selecting alternative secondary added entries. This type of specificity is necessary for both card production and online retrieval. Taken together, all of these considerations make most systems and library technical people hesitate to recommend any major changes to the MARC format at this time.

Benefits

At this time, therefore, in terms of information retrieval, there does not seem to be any major force toward either simplifying or shortening the MARC format to facilitate retrieval. This becomes an even more cogent sentiment when we consider that major development efforts have already been begun in the areas of online catalog access and information retrieval. Delays in these development efforts now caused by

changes in the MARC formats could be enormously wasteful of the time and effort already invested, and could postpone urgently needed implementation of new, easily maintainable online systems.

Costs

There is no firm cost data to guide us in considering the impact of MARC format changes in the information retrieval environment. Generally accepted assumptions are, however, that because of our lack of knowledge and experience in this area, it is simply too risky and potentially costly to experiment.

Impact of Change

Overall, without more experience in this area, it is the general opinion that the fullest level of descriptive specificity of the MARC format might be required to design and implement online catalogs/information retrieval systems which can be responsive to the needs of a variety of users and levels of information. Interaction with other subsystems and formats is also incomplete, thus clouding our vision of the impact of change over the breadth of the library community.

SUMMARY AND CONCLUSIONS

The original purpose of the MARC format is still a cogent and necessary one—that of allowing for a great variety of individual library needs for products, practices, and policies via a standardizing communications format. Both catalog card production and online retrieval necessitate the same level of specificity, though particular tags, indicators, and subfield codes may vary.

As we look toward a variety of authoritative cataloging sources the MARC format, in addition to a specific coding of bibliographic information, might also have to specify descriptions of cataloging actions so that the greatest degree of “shareability” might exist. Some of this related authority-type information will either be carried as part of the MARC format or in some manner as linked records.

The computer operations that utilize the MARC formats exist under the constraints of a variety of internal processing formats and design constraints. For each internal processing system, however, the specificity of the MARC format offers flexibility and

efficiency for a number of different processes and products.

Taken by itself, the MARC format is no more difficult to work with than any other standard or technique for both librarians and computer people. While it might be useful for librarians to implement training aids such as online documentation, access to library manuals (particularly that of the Library of Congress), and so forth, the benefits of aids such as these are trivial since the coding can be learned rather quickly through experience. For computing people, on the other hand, changes in the formats can be very expensive and disruptive. There is general agreement, moreover, that over the long term we have got to be able to maintain the MARC format in response to experience with retrieval and other theoretical and technical advances. The main thrust of maintenance in the computing realm is consistency across formats, but approaching this type of simplification requires a number of preliminary steps if it is to be implemented effectively.

We need to develop a vocabulary for jointly discussing the elements of the problem. In addition, a major review needs to be undertaken of the internal processing formats and design constraints of the major computer operations—both to serve as a benchmark for measuring the impact of format changes, and as a guideline for newly developing systems to assist in avoiding mistakes in the development of new computer operations.

Someone needs to be thinking about and designing the ultimate, comprehensive MARC format—not to be implemented, but to serve as a springboard for discussion and for consideration of system design. We need to establish limitations on what we will handle with the MARC formats and where we will begin to rely on underlying formats instead. The development of a comprehensive MARC conceptualization would also provide a protocol for undertaking the improvement of MARC and would serve as a benchmark against which local systems could be compared.

At the very least, the steps described here would facilitate the consideration and implementation of making the formats consistent across types of material—a goal which is seen by all to be highly desirable.

We need a format which is consistent, easily maintainable without being uncontrollably disruptive, and responsive to changing needs which are likely to accelerate as we gain experience with online systems.

Rather than recommending or supporting the implementation of specific changes to the MARC format, it is essential that the library community begin to establish the framework and benchmarks necessary to maintain the MARC formats over the long term as well as to guide short-term considerations. ARL and others can play an important role in undertaking and encouraging a broader approach to this pressing problem. Such an approach will not only reduce the risk of decision making, but will also assist in the development of the cost/benefit data needed to enhance consideration of format changes.

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Comparing Fiche and Film: A Test of Speed

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INTRODUCTION

For more than a decade librarians have been responding to budget pressures by altering the format of their library catalogs from labor-intensive card formats to computer-produced book and micro-

formats. Studies at Bath,¹ Toronto,² Texas,³ Eugene,⁴ Los Angeles,⁵ and Berkeley,⁶ have compared the forms of catalogs in a variety of ways ranging from broad-scale user surveys to circumscribed estimates of the speed of searching and the incidence of queuing. The American Library Association published a state-of-the-art report⁷ as well as a guide to commercial computer-output microfilm (COM) catalogs pragmatically subtitled *How to Choose; When to Buy*.⁸

In general, COM catalogs are shown to be more economical and faster to produce and to keep current, to require less space, and to be suitable for distribution to multiple locations. Primary disadvantages cited are hardware malfunctions, increased need for patron instruction, user resistance (particularly due to eyestrain), and some machine queuing.

The most common types of library COM catalogs today are motorized reel microfilm and microfiche, each with advantages and disadvantages. Microfilm offers file-sequence integrity and thus is less subject to user abuse, i.e., theft, misfiling, and damage; in motorized readers with "captive" reels it is said to be easier to use. Disadvantages include substantially greater initial cost for motorized readers; limits on the capacity of captive reels necessitating multiple units for large files; inexact indexing in the most widespread commercial reader, and eyestrain resulting from high speed film movement.

Microfiche offers a more nearly random retrieval, much less expensive and more versatile readers, and unlimited file size. Conversely, the file integrity of fiche is lower and the need for patron assistance in use of machines is said to be greater than for self-contained motorized film readers.

THE PROBLEM

One of the important considerations not fully researched is that of speed of searching. The Toronto study included a self-timed "look-up" test of thirty-two items "not in alphabetical order" given to thirty-six volunteers, of whom thirty finished the test. The researchers found the results "inconclusive" but noted that seven of the ten librarians found film searching the fastest method. "Average" time reported for searching in card catalogs was 37.3 min-

utes, in film catalogs 41.6 minutes, and for fiche catalogs 41.7 minutes. A reanalysis of the original data shows a stronger advantage of fiche over film (45.3 minutes versus 51.7 minutes) when all times except duplicates are totaled, but that difference is almost entirely due to one extreme score (203 minutes).⁹

The Berkeley report of fiche/film comparability addressed the issue of retrieval speed directly. By constructing a series of look-up tests composed of items selected from a large public library COM catalog, the researchers were able to compare microfiche and microfilm formats while holding other variables constant. In one test involving thirty-six paid users and 252 trials, microfilm was determined to be faster by 7.6 percent (± 2.5 percent). In a second test, forty volunteer users were timed in 240 trials and the advantage of film over fiche dropped to 5.7 percent (± 2.5 percent).¹⁰ Although rigorous in design and execution, the Berkeley experimenters used in their look-up tests questions that naive users might misinterpret, e.g., "You want a book about Paul Robeson, written by Eloise Greenfield. Find the listing and give the call number"; and some which could be confusing, e.g., "Does the library have any joke books? If so, give the call number for one."¹¹ Such questions potentially pose an element of uncertainty for subjects: Should I look under Robeson or Greenfield? under joke books or humor? In addition, questions were selected by "browsing the file for target items," a procedure which could result in an uneven distribution of items which in turn could bias the results. Since the number of observations is relatively large the reliability of the results is not questioned; the validity may be.

The study reported here was executed by a class in research methods taught by the author during the same time as the Berkeley study; we used the same two formats of the same catalog, and attempted to answer the same question: Using the best available equipment, which microformat is faster to search?

ASSUMPTIONS

We assumed (1) the two forms of the catalog were identical; (2) the quality of the image was not significantly different; (3) a

search for items selected randomly from the file and arranged randomly was a fair test of retrieval speed; and (4) graduate students in library science were reasonably representative users for a test of speed.

METHODOLOGY

We used a dictionary catalog from a public library system with 436,791 entries, of which 5,631 were author, 111,158 were title or added entries, and 320,002 were subject entries. Using a random number table, we selected from the catalog 16 entries which were reproduced and randomly arranged to form the test. Of the 16 items, 3 were author entries, 8 were title or added entries, 5 were subject entries. The sequence, which presumably would affect the speed of retrieval more in the film format because of the necessity to scroll from one letter to another, was ACWNSKCBWMHLPPAL. The test was then administered to thirty-seven volunteer graduate students randomly assigned to a Micro-Design 4020 fiche reader or an Information Design ROM 3 film reader. The two readers were located in the same room. The 86 fiche were held and displayed by a Ring King binder. All times were measured by a stopwatch. Questionnaires administered before and after the test established that the two groups did not differ significantly in age or in self-perceived mechanical ability. Of the film users, 64 percent used micro-formats "occasionally" or "frequently" compared with 35 percent of the fiche users. Of the total group, 73 percent wore glasses and 62 percent reported prior physical problems with both film and fiche readers used before the test.

RESULTS

Table 1 shows that the mean speed of the film users was 16.7 minutes, significantly faster than the 25.3 minutes recorded by the fiche users; the range of speed for the film users was less than $\frac{1}{3}$ that of the fiche users. Even the slowest film user was faster than 70 percent of the fiche users. However, the fastest fiche user was faster than 70 percent of the film users. The range of fiche scores is more than 3 times that of the film scores (Figure 1). The standard statistical test shows the difference of means to be significant at the .01 level.

Table 1. *Speed of Retrieval (in Minutes)*

Format	Low	High	Mean	Standard Deviation
Microfilm (n=17)	12.3	19.45	16.7	2.34
Microfiche (n=20)	14.6	38.0	25.3	7.47

$t=4.8, p < .01$

DISCUSSION

Searching motorized microfilm appears to be significantly faster than searching microfiche, on the average, for relatively inexperienced users. Even the slowest time on the film was faster than most fiche times. The wide range of fiche scores suggests the possibility that frequent users could improve their searching times; very experienced users may be able to search fiche faster than film.* Because of the relatively small numbers of subjects and observations

*The author, an experienced fiche user, was timed at 11.6 minutes; this was the fastest time recorded by either fiche or film users.

involved, the results should be interpreted with caution. Although the advantage of film over fiche in this study is greater than that shown in the Berkeley report, differences in design and analysis must be taken into account.

ACKNOWLEDGMENTS

The author wishes to acknowledge the members of his research methods class, especially David Fishbaugh and Carol Manoukian, for their assistance.

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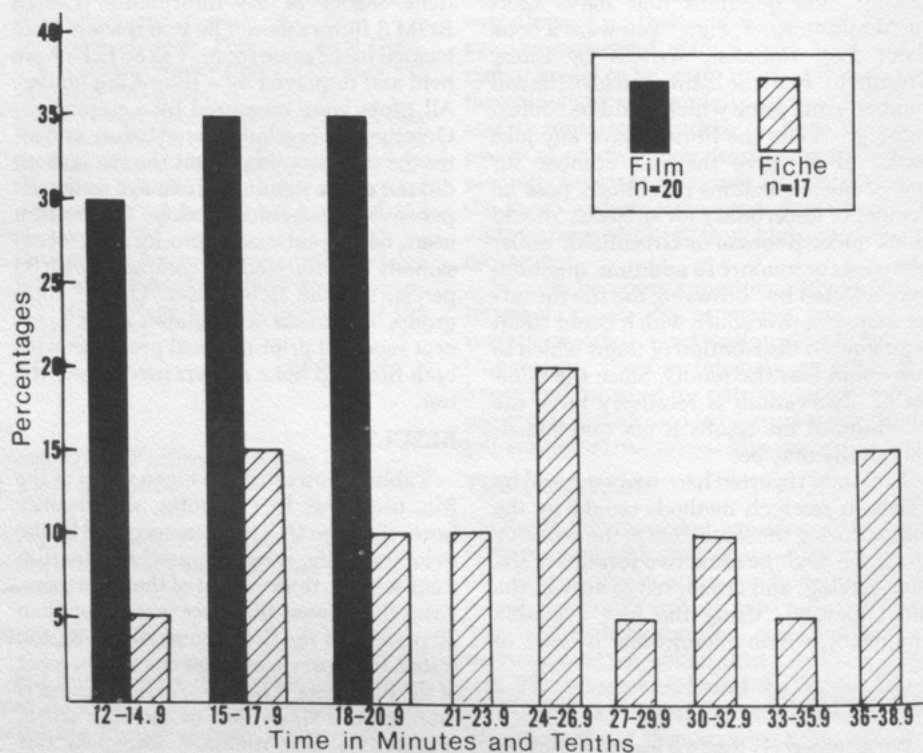


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Electronic Order Transmission

James K. LONG: OCLC, Inc., Dublin, Ohio.

In this era of decreasing library allocation from the public sector, libraries are realizing increased benefits from the automation of the acquisitions process. The price of hardware is decreasing and the capabilities of the available offerings increasing. We have evolved from the small local library collection of data and printing of orders, through the book vendor offerings of an on-line connection to a single vendors inventory. These systems still required local mailing for all other vendor orders.

In 1981 we have seen a greater emphasis on electronic ordering. Memorial University in Canada has been experimenting in sending orders directly to John Coutts Library Services Ltd. in print format using the UTLAS CATSS System. Wayne State University is planning to use the Ringgold NONESUCH acquisitions system to transmit orders electronically to Book House using the BISAC tape format. Blackwell/North America and the Academic Book Center have experimentally used WLN to receive test orders in a print file format. These all save time in getting the orders to the respective vendor. If sufficient volume can be generated there may be a savings in transmission costs over the U.S. Mail.

However, in order to realize maximum economics in this electronic process, four activities need to occur.

1. Acquisition orders must be collected from multiple libraries at a central site to generate volume for dispersal to multiple sites.
2. Standard formats need to be accepted and enforced for order transmission.
3. The ISBN must become a universally accepted part of the library acquisitions order.
4. The library must receive order status information from the vendor. Once again, this should occur via a standard data format.

At OCLC there were 113 libraries, as of November 1981, that could send printed orders from a central site to over 15,000 addresses of their choice. By July 1982 the projection is for over 200 libraries to be using the system. The library's order is batched by the vendor address that the library has specified. This process offers savings by sharing mail and printing costs between participants. With the proposed installation of direct transmission in 1982, this central collection will afford shared transmission costs. This is the type of centralized collection that maximizes the benefits of electronic ordering.

Within the book industry, standards for electronic data transmission for book ordering have been developed. In May of 1981 the Book Industry Systems Advisory Committee (BISAC), a subcommittee of the Book Industry Study Group (BISG), ap-

proved the third version of their purchase order format. This is a simple format with fixed length fields and fixed length records. It was developed for tape transmission of book orders and relies heavily on the use of the International Standard Book Number (ISBN) for accuracy. ANSI Z39 subcommittee U is working on an ANSI purchase order data transmission format for libraries. This effort is in cooperation with BISAC. In 1981 there were nine book vendors using the BISAC purchase order format, including the large retail chains Walden and Dalton. There were also twelve vendors using the BISAC invoice format, five vendors using the title update format, and one vendor using the approved data transmission protocol (IBM 3780).

This book ordering activity and standards use is fine for the book vendors and retailers. But where are the libraries? OCLC plans to use BISAC data transmission protocol and fixed data format in their initial direct transmission effort. However, there are some real problems with these formats relative to library needs. First, the formats do not provide for serials ordering or renewal. Second, data fields in the format are fixed length. This is a real problem when ordering esoteric publications. Especially since the title and descriptor entries are a single field. Obviously there are many items that a library needs to order that cannot be supported by this current standard. OCLC and DataPhase have representatives on the BISAC purchase order subcommittee. This subcommittee is developing a variable length P.O. format. However, if there is to be real cooperation, and the accompanying economics, we must have more active participation from the library community.

The cataloger has the Library of Congress Catalog Number (LCCN). However, this is inadequate for library acquisitions. The ISBN was developed for acquisitions. The ISBN identifies the publishers or current distributor, the binding, etc., so necessary for accurate acquisitions. You can order music, maps, recordings, or film by using the ISBN. This is providing you order from a publisher that assigns ISBNs to those materials. It also assumes that you include the ISBN on the order. Baker and Taylor, Brodart, Random House, and McGraw-

Hill estimate less than 25 percent of their orders contain an ISBN. Yankee Book, Blackwell/North America, and the Book House report approximately 10 percent use on orders received. A significant number of these ISBNs are incorrect, obsolete, or otherwise erroneous. If we are to realize the tremendous economies possible with electronic transmission, we MUST have greater and more accurate use of the ISBN. It is simply uneconomical to transmit all of the data necessary to accurately identify a piece via the cataloging fields and subfields for every order; even if this information were available for ordering.

Another standard developed by BISAC is the Standard Address Number (SAN). All library vendors, public, academic, and school libraries have been assigned a SAN. Do you know yours? Do you know the SAN of your vendor? These SANs are available in your libraries' reference sections, as well as the online name-address directories that accompany the network acquisition systems. If electronic ordering is going to be used most effectively and economically, the SAN plays an important part. It is not economically efficient to transmit hundreds of characters of address information.

The last item that becomes feasible with electronic transmission is order status information. The day is gone when we can afford to keep thousands of dollars encumbered with acquisition pieces that are unavailable. The normal practice of automatic cancel after sixty or ninety days, keeps those monies committed. How much better would it be to know within twenty-four to forty-eight hours of an order that the material was unavailable. Those funds, that become more dear each year, could be recommitted to more available items. This would be advantageous to both the vendor, the library and ultimately the library patron. Both the BISAC invoice and title update formats have potential for use in reporting. It would be better, however, if we could derive a format specific for title status.

In closing, I urge you to use the ISBN and SAN; pursue avenues of collective ordering; and lastly, become active in the standards effort. It is the library that ultimately has the most to gain from a cooperative, coordi-

nated, volume-oriented, resource-sharing electronic ordering process.

For information relative to BISAC transmission formats or BISAC membership, write to: Book Industry Systems Advisory Committee, 160 Fifth Ave., Suite 604, New York, NY 10010.

For input to BISAC purchase order formats, write to: J. K. Long, Chairman, BISAC P.O. Subcommittee, c/o OCLC, Inc., 6565 Frantz Rd., Dublin, OH 43017. (Mr. Long is also the library or network representative on the ISBN advisory council.)

For input to the ANSI Z39 P.O. transmission formats, write to: Mr. E. Muro, Chairman, Subcommittee U, c/o Baker & Taylor Co., 6 Kirby Ave., Somerville, NJ 08876.

For problems with the ISBN and SAN, write to: Mr. Emory I Koltay, International Standard Book Numbering Agency, 1180 Avenue of the Americas, New York, NY 20036.

Microcomputer Backup to Online Circulation

Sheila INTNER: Emory University, Atlanta, Georgia.

Our primary objective in purchasing microcomputer systems for the Great Neck Library was to provide a better alternative to paper and pencil checkouts when our minicomputer-based CLSI LIBS 100 automated circulation system was down. Two difficult and lengthy downtime periods occurring shortly after going online convinced the administration that public service should not be jeopardized because of system failure. After investigation of the backup systems vended by Computer Translation, Inc.,¹ two of them were purchased in November 1980.

Computer Translation, Inc. (CTI) sells a turnkey backup system based on an Apple II Plus microcomputer, with two mini-disk drives using 5¼" floppy diskettes, a TV monitor, and a switching system connecting the Apple to the LIBS 100 console and terminals. Software designed to interface with the CLSI system is part of the package. The backup collects and stores data for

check-ins and checkouts and then dumps them into the database by simulating a terminal when the mini-main-frame is operational again. This requires dedicating a terminal to this process until complete. It can also be used alone as a portable unit for circulation purposes, or with any of the many Applesoft packages available, or with an Applesoft program of the user's own design.

Our initial experience in Great Neck was with a borrowed demonstration system, set up by a sympathetic CTI representative on the spur of the moment in tandem with and connected to the Main Library checkout station's CRT laser terminal after several days of downtime. The circulation staff cheered as the familiar prompts appeared on both screens. They used the CLSI equipment which they were accustomed to operating and the computer room staff learned to operate the CTI system. The ease with which the Apple could be transported to different locations in the building and the immediate relief it gave wherever it was connected, sometimes one checkout station, sometimes another, led us to put off deciding on a permanent installation at first. We thought it might be more advantageous to keep it on a rolling cart and use it wherever a terminal was down, or wherever the traffic appeared to be heaviest. We continued in this manner for a while even after both of our own Apple systems were delivered.

It soon became apparent that the Apple and its accompaniments, especially the switching system with its dangling cables, was a nuisance at the checkout counter. People with piles of books or records tended to nudge it dangerously close to the edge or jiggle its connections loose. The circulation staff didn't like waiting until someone from the computer room could be spared to bring up the system, secure the connections, and turn on the Apple. Also, although the Apple is a very reliable instrument which has given us negligible downtime, bumpy rides over various floors, carpets, lintels, and textured tiles occasionally loosened its chips and rendered it, too, inoperative.

CTI representatives were called in to make a more permanent installation for the Apple in our computer room, a simple operation requiring some additional cable. Se-

lection of the terminals to be attached as alternate backup or dumping sites was not so easy, however. The choice of the primary backup site was not a problem, since one of the two checkout stations flanking the main door was fairly obvious. But the second terminal which would be preempted for dumping was a more difficult decision. Dumping sessions vary in length depending on the number of records to be processed and the activity on the rest of the LIBS 100 system. In our library, we find it takes about an hour to dump 100 to 150 transactions. This appears to be slower than average and may well be due to the extremely high level of system activity. Thus, dumping 1,000 transactions would take a full working day. We had been online for such a short time that great backlogs of patron and material data entry from new registrants and unconverted books had developed and were a high priority item. Neither the circulation department, which was handling registrations, nor technical services, which was handling materials, felt they could afford to lose much terminal time for dumping. Thus, the reference department's information desk terminal was reluctantly chosen as the alternate terminal on the grounds that they only did inquiries for materials which borrowers could locate by means of searching the catalog and making trips to the shelves. If necessary, information desk personnel could step across the aisle to the circulation department and use a terminal there.

The permanent installation was set up in this way for one backup system, while the other one remained mobile in the event we wanted to use it at one of our three branches. Only the switching box and cables were really unmovable. The Apple, drives, and monitor could still be disconnected and moved about at will.

Experience over the last few months with this arrangement demonstrated that, all things considered, it is unwise to attach two public service terminals to one Apple, in spite of the pressure it puts on behind-the-scenes operations to lose terminal time in the event of an extensive dump. The reaction of the public to being told a terminal that usually helped them was inoperative has been so negative it outweighed the de-

lays in data entry. Therefore, a change in the current configuration will soon be made.

Meanwhile, we realized the second backup system was not being used to greatest advantage. When the LIBS 100 was down, the next most pressing demand after main library checkouts were checkouts at the largest branch, located near the railroad station. We were collecting about thirty transactions an hour or less at other locations in the main building while the station branch staff were writing down twice that amount or more and explaining to their public that the computer was down. It seemed important to pursue the possibility of connecting one of the station branch's terminals to the second Apple while keeping the Apple itself in the computer room in the main library. Not only was there even less space in the branch for another piece of hardware on their counter, but staff training and hardware control presented a greater problem since many more part-time people were employed there.

CTI worked on the problem for about two months, resolving it through the addition of a modem to the basic configuration. In this new installation, which we did ourselves with phone assistance from CTI, and which has been operational for three weeks as of this writing, the dedicated phone line connector for the branch terminal is removed from its port on the LIBS 100 console and inserted into one of the switching box connectors. The Apple is turned on as usual and the CRT laser terminal at station branch appears to operate normally. In fact, it operates so closely to its usual LIBS 100 mode that staff members forget they are not online with the LIBS and call up to find out why inquiries don't work.

We are still experiencing a significant amount of downtime with our LIBS 100. Some of this is attributable to our relatively full storage, requiring us to perform house-keeping routines frequently, but the rest is a result of system failure. Now, however, because of the Apples, this causes far less anguish in the circulation department. When the LIBS 100 goes down, the permanently connected backups are switched on in the computer room by their staff and circulation clerks continue checking materials out

on their regular CLSI equipment in the main library and station branch. On days when housekeeping chores are scheduled, the console operator's job includes turning on the Apples so we can begin serving the public when the doors open at 9:00 a.m. Unless downtime persists for more than a day, no other routines are done except checkouts. Under some circumstances, certain materials might be checked in on the Apple, but it is not desirable to do this for newer materials on which holds may have been placed.

When the LIBS 100 is online again, the checkout station is switched back to normal mode and the Apple takes over the information desk's port for dumping, rendering that terminal inoperative. Dumping continues around the clock until all transactions have been processed from both Apples. Normal activities proceed at all other terminals. Diskettes are dumped in chronological order. As the dumping process operates, a file of transactions eliciting error or exception messages from the LIBS 100 is created on the Apple diskette. This file is available for attention at a later time for manual entry into the database.

The chief asset of the dumping process is the accuracy achieved by automatic inputting. When we used paper and pencil, not only was the original writing time consuming, but manual data entry was difficult because of illegible handwriting, inaccurate transcription of the numbers, inaccurate inputting into the database, and lack of available personnel for the job. The CTI system resolves all of these difficulties, but a price is paid in the loss of the dumping terminal's services. The public may be less disturbed if a terminal in a nonpublic area is used. But to the department involved, access to the database is a central part of their work and its loss severely limits their output. In fact, dependence on the automated circulation system by all departments in the library has been swift and universal even though we originally assumed the terminals outside the circulation department would be used sparingly.

Plans are being made to store personnel records in machine-readable form on diskettes. Other developments are being put on a back burner until we have less frequent

need for the Apples as backups. However, LEVELS, Great Neck Library's Youth Department, has several Apples of its own on which budding "computerniks" practice their art. For them there are few limits to possible applications—perhaps only the outermost boundaries of imagination.

REFERENCE

1. Joseph Covino and Sheila Intner, "An Informal Survey of the CTI Computer Backup System," *Journal of Library Automation* 14:108-10 (June 1981).

Computer-to-Computer Communication in the Acquisition Process

Sandra K. PAUL: SKP Associates, New York City.

In the 1970s, we entered the period of computer-to-computer communication; we now appear to have reached the second stage of development. Today more than seventy publishers are equipped to receive computer tape orders and input them directly to their order fulfillment systems; twenty-six publishers can produce computer invoices and credits for their customers; six are capable of sending monthly updating information about titles, prices, publication dates, and books declared out of print. All of this, however, is based on a system through which computer tapes are sent from buyer to seller and back via the United States mail. The next step—computer-to-terminal or computer-to-computer communication—is just around the corner.

HISTORICAL PERSPECTIVE

How did this happen? It started in September 1974 when DeWitt C. ("Bud") Baker, newly appointed president of the Baker & Taylor Company, envisioned the savings his company could find if their customers provided the International Standard Book Number (ISBN) on their orders. He also believed that the volume of paper created by the computer was expensive and time-consuming for publishers to handle.

Always a visionary, he believed that computers communicating directly with each other would not only save time and money, but would prevent human errors introduced by research clerks or keypunchers. He invited publishers, booksellers, librarians, wholesalers, representatives of school systems, and others to a full-day meeting at the W. R. Grace building.

This diverse group of individuals discussed the ISBN—what it was, what it might do. By the end of the day, the group defined two areas in which efforts might bear fruit. One was educational—publishers needed to be told the importance of printing valid ISBNs on their books, in their promotional materials, in their advertising, and on any other source of ordering information, and on the invoices and packing lists they send to their customers. Wholesalers, librarians, and booksellers needed to be shown the efficiency their use of ISBNs on orders introduces to the fulfillment process at publishing houses and wholesaler offices. These functions were assigned to an ISBN Publicity Committee, chaired by Franklyn (“Lee”) Rodgers of Scribner Book Company. The second function was the design of computer-to-computer formats for orders and invoices that would be keyed to the use of ISBN as title identifier and would be industry-wide in scope. This function was undertaken by an ISBN Data Transmission Committee, chaired by David Wolverton, then of Brodart.

The ISBN Publicity Committee produced a booklet and posters, distributed them at all major conventions, made press releases available, and prepared articles for inclusion in the newsletter of all of the major industry associations. The committee surveyed the use of ISBNs by publishers and published a list of in-house contacts for ISBNs. The committee’s program was a success!

FORMAT DEVELOPMENT

The ISBN Data Transmission Committee had a more difficult task. The first question they faced was one of basic approach. Immediately they decided to proceed with a format for orders rather than invoices. Next, they reviewed the level to which the

format would be directed. Believing it was more appropriate to “crawl before they walked,” they decided to develop a format that could be generated on computer tape, which would be mailed from buyer to seller through the United States mail. Once there had been experience with that format, work would begin on direct computer-to-computer communication formats and protocols. The final decision related to form.

The majority of people volunteering their time to work on this committee came from the major book publishing houses. Additional members included two major bookstore chains, B. Dalton and Waldenbooks; the New York Public Library (NYPL) and three major wholesalers, Brodart, Baker & Taylor, and the Ingram Book Company. Representatives from NYPL, R. R. Bowker Company, and the library wholesaling organizations were familiar with American National Standard Z39.2—Bibliographic Information Interchange on Magnetic Tape. They felt that this standard, which is the basis for the MARC tapes, should also become the basis for an order to be sent on magnetic tape. The majority of the committee, however, was not only unfamiliar with Z39.2, but with the concept of programming for variable length records and/or fields. These data-processing managers argued that the format basically would consist of sending a quantity and the ISBN for each title ordered, not the sending of bibliographic records as such. After review of a strong and well thought out letter from Michael Malinconico supporting the use of Z39.2, the majority held to their decision and the subcommittee, chaired by Tom Brady, then of Baker & Taylor, was assigned responsibility for developing the first computer-to-computer order format. It is a fixed length field and record format.

Debate continued throughout its development. Each publisher hoped to have to do minimal programming in order to interface the new format and the input requirements of his or her specific order fulfillment system. Provision was made for minimal bibliographic information if an ISBN was unknown. Polling of the members resulted in decisions to limit author and title to thirty characters, for instance.

Shortly before the format was approved by the committee, Dick Fontaine, then sales manager of B. Dalton (now president) and Dick Lieberman, sales manager of Random House decided that they would begin sending tapes in the mail as of January 1975. Once the format had been approved, other publishers joined the group. Orders were sent from Baker & Taylor and Brodart to Random House, John Wiley, Prentice Hall, and Doubleday. B. Dalton continued to send Random House tape orders in a slightly different version of the format.

By the end of 1976, it appeared that the task of the ISBN Publicity Committee had become publicizing the order format, rather than the ISBN as such. The two committees decided to merge in March 1977, selecting the name Book Industry Systems Advisory Committee (BISAC), as much because it was a pronounceable acronym as for any other reason. Development of an invoice format, originally considered of immediate importance by Waldenbooks, had been shelved after that company lost interest and the individual chairing the subcommittee working on the format left the field.

The next step became reports of experience with the order format. Fields left open for individual use came under review for standardized coding; procedures were developed for the marking of information on the outside of the tapes and paperwork to accompany it; some publishers refused to accept tapes without ISBNs, while others pondered the procedure to separate titles without ISBN from those with and then merge the two for discounting purposes. With all of its inadequacies, the format was working. Publishers reported saving up to one week of time in processing tape orders. Random House analyzed returns for wrong title or wrong edition one year after they began receiving tape orders from Dalton, Baker & Taylor, and Brodart. They found an extraordinary 47 percent decrease in that type of misshipment to those three customers.

With a few years experience under their belt, BISAC decided to revise the format to accommodate the inadequacies and problems members had found with it. In addition, the R. R. Bowker Company and OCLC, Inc., had just announced their in-

tentions of developing acquisition systems which would replace them in the role of "order forwarders." They would prepare orders for other organizations and transmit those orders, on tape or directly online, to the vendor of the organization's choice. This forced BISAC to include a field for an "order placer" in addition to the traditional "bill-to" and "ship-to" customer name and address. The revision was approved in February 1977 and called "Format #2." (It is this version of the format which has been programmed by publishers and wholesalers noted in the introductory paragraph).

BISAC members began pressuring B. Dalton to convert from their original "pre-format 1" format to Format #2. In analyzing the cost of doing so, Dalton also considered the potential saving they would have if invoices from publishers were received on tape. Although they have never made those figures public, the potential was so great that Jim Nermyr, then their vice president of data processing, agreed to chair a subcommittee to develop an invoice format, paralleling as closely as possible, the order format. Once that was approved Jim made "selling trips" to New York and elsewhere, convincing over forty publishers to program for the invoice format in return for receiving orders on tape in Format #2 from Dalton.

Finally, BISAC members began expressing concern about misinformation on orders and invoices. Typically, when two organizations agreed to communicate using the standardized formats, they would exchange tapes of titles, descriptions, and the appropriate ISBN for each. They would produce error reports and the purchasers would bring their computer records in line with the publisher's. However, once price changes occurred, books were made out of print, or publication dates changed for not-yet-published titles, orders carried erroneous information. To resolve this, a subcommittee, chaired by Andrew Uszak of R. R. Bowker Company, set about developing what has come to be known as the "Title Update Format." This format allows a publisher to send a monthly tape of all titles on file indicating those fields that have changed since the prior month, or simply sending the ISBN and changed field infor-

mation. Six publishers are now sending information in this format to the Ingram Book Company on a monthly basis; others will be doing so shortly. (The format is also the basis for information college textbook publishers send to update the monthly AAP Microfiche Service.)

MOST RECENT CHANGES

At its May 1981 meeting, BISAC approved minor modifications to its order and invoice formats. These changes included increasing the zip code field to nine digits and specifying a seven-digit field for the Standard Address Number. The invoice format was modified to accommodate its use for sending credits as well as invoices. These new formats were released in August 1981 and are "titled" Order Format #3 and Invoice Format #2. We guess that it will take at least a year before the bulk of those organizations now sending tapes in Order Format #2 and Invoice Format #1 program for the revisions.

During 1980, BISAC members began expressing concern that the "crawl before you walk" philosophy had stopped in the crawl stage. Baker & Taylor and Brodart, in particular, expressed concern that the generation of tapes was expensive and using the mails introduced such delays that orders were filled more promptly when phoned into publishers than when sent in the BISAC format. In addition, OCLC, which had programmed the order format into their new acquisition system, agreed that sending this information on tape would be far less effective than transmitting it online to the major vendors. In 1980, BISAC established a subcommittee, chaired by Jim Long of OCLC, Inc., to develop an alternative version of the order format. This version, with variable length fields and records, is intended for use in a communication mode between the main frames of two computers. We expect there will be deep consideration and long debate on this proposed version at BISAC meetings in the next few months, with passage expected in 1982.

Finally, BISAC brought its formats to the attention of American National Standards Committee Z39 (ANSC Z39) when format #2 was completed. At its May 1981 meet-

ing, the committee decided to ask Z39 to officially begin work on formalizing both the Order Format #3 and the new variable-length order-format alternative as American National Standards. The Z39 program committee and executive council agreed; Ernest Muro of Baker & Taylor is chairing the Z39 subcommittee charged with this task.

As BISAC activities became more widely known, this ad hoc committee strained the resources of its volunteer officers in answering requests for information, for copies of the formats, and in preparing and disseminating the minutes of their meetings to an ever-increasing number of interested individuals and organizations. In 1980, BISAC approached the Book Industry Study Group, Inc. (BISG) with the suggestion that they become a permanent committee of that research organization, whose membership also included publishers, librarians, booksellers, and wholesalers, as well as book manufacturers. The BISG agreed and today supports BISAC activities through its offices. At the end of this communication is the address which can be used to request any of the formats from the BISG office.

THE FUTURE

Automation is here and here to stay. Individual libraries that once considered it impossible to imagine being able to afford a computer now have several—and soon will have more—acquisition systems available to them through independent vendors and through the national bibliographic utilities. Wholesalers are gaining computer sophistication, as are publishing houses. As an industry, we are lucky that those volunteer data-processing types who formed BISAC and kept it alive were each willing to make the compromises necessary to provide us with a standardized industry-wide format. Other industries have not been so lucky, with major vendors using their dollar-volume clout to demand that their customers accept orders in their own, unique formats. However, the need for standardization is known. In 1979 the American National Standards Institute approved the creation of a new committee—ANSC X12—Business Data Interchange. This committee is charged with developing a na-

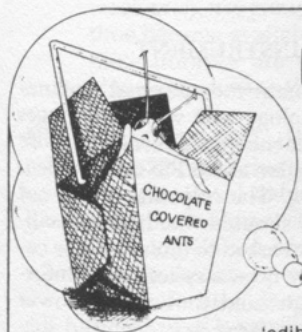
tional standard format for transmission of orders, invoices, and other transactions related to the sale of merchandise, and the payment for that sale through electronic funds transfer. BISAC and ANSC Z39 have been carefully reviewing the progress this new committee is making. It appears that the formats that result from their efforts will be variable length fields and sufficiently general in nature to fit the needs of librarians, booksellers, wholesalers, and publishers, along with those involved in the sale and purchase of all other types of commodities.

The traditions and laws of this country preclude any organization from "forcing" a library to make use of these standardized formats. However, the cost savings, the guarantee of accuracy of the record received, and the speed with which the order reaches the fulfillment center suggest that these formats will increase in use in the future.

We also anticipate that more and more use of the formats will be in an online transmission mode, rather than in the form of computer tapes in the mail. As the volume

of transmissions grows, we expect that some day messages from purchasers will be forced into queues to reach the more popular suppliers. To the extent that the major wholesalers provide terminals to their customers and/or facilities to accommodate a large number of transmissions, their queues may be minimal. However, it will be interesting to discover how individual publishers will cope with this situation.

Readers who are interested in receiving copies of Order Format #3, Invoice Format #2 or Title Update Format #1, should write to: Book Industry Study Group, Inc., 160 Fifth Ave., New York, NY 10010. There is no charge for these formats. If all three are requested and first class mail is requested, postal costs are billed to the recipient. Those interested in active participation on BISAC should send a letter to the organization stating that request. Finally, those interested in receiving copies of the minutes of the bi-monthly meetings held between September and May should send a request, accompanied by a check for thirty-five dollars to the BISG address.



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Reports and Working Papers

Cable Library Survey Results

Public Service Satellite Consortium: Washington, D.C.

The following paper was distributed to PSSC members in May 1981, and is reproduced here to bring it to the attention of a wider audience.

BACKGROUND

The Public Service Satellite Consortium (PSSC) conducted a survey of academic libraries in July 1980 to study their data communications needs and services. Results of that study, coupled with library interest generated by that study, convinced PSSC that: (1) libraries have a wide variety of communications needs which could be addressed with appropriate uses of telecommunications; (2) all types of libraries are affected, not just academic libraries; and (3) data transfer was but one of many types of library services in need of better communications.

This information motivated PSSC to take a broader look at library communications. That second look resulted in the identification of the "cable library" (CATVLIB) phenomenon and video library services.

In December 1980, PSSC launched a second survey directed to cable libraries; that is, libraries of all types which are connected to local cable companies. This study was aimed at determining to what extent, if any, a national satellite cable library network might be already in technical existence. How many libraries are presently connected to cooperative cable companies with satellite hardware and excess satellite receiver capacity? And of that number, how many cable libraries would be interested in participating in satellite-assisted li-

brary services and video-conferences?

To answer these questions, PSSC mailed questionnaires to 101 libraries that had been identified as potential cable libraries. In order to allow the participation of unidentified cable libraries, PSSC also advertised the survey in various library periodicals, including *American Libraries*, *Cable-Libraries*, and *JOLA*. That ad resulted in an additional 97 cable libraries requesting to participate in the survey, raising the total number of libraries receiving the questionnaire to 198. As of April 1981, 86 libraries have responded, yielding a 43% return. Follow-up phone calls have indicated that more surveys are forthcoming, or that the questionnaire proved to be irrelevant to present library conditions. In some cases, copies of the survey were requested and distributed for informational purposes only.

THE SURVEY INSTRUMENT

The questionnaire incorporated explanations of terminology and was eight pages long. Additional enclosures furnished more specific information about PSSC and video-conferencing. The respondent was not only questioned about his/her library facilities, but also was asked to interview the cable company for necessary technical information. Though contributing to slower returns, this two-tiered approach did succeed in establishing contact between the library and the cable company, as well as provide all the data required to profile each library as a potential network participant.

SURVEY PARTICIPANTS

Since a national network is being pursued, an attempt was made to reach as many of the states as possible. Thirty-seven states received copies of the survey, while thirty-one had at least one responding li-

brary. All types of libraries were surveyed. Those surveyed included elementary school libraries, high school libraries, vocational school libraries, academic libraries, public libraries, regional library networks, state libraries, library systems, special libraries, and libraries that also double as their local community access center for cable television. Of the 86 who responded, 63 were public, 18 were academic, 4 were school, and one was a special library.

Responding libraries have been categorized according to their ability to be an active member of the network:

- UF Usable Facility—Those libraries that have met all the technical requirements for network participation. The library must be currently connected to an operational cable system which has a satellite receiving station and excess receiver capacity. In addition, the cable system and the library must have indicated an interest in participating in and hosting occasional satellite-transmitted events.
- NXC No Excess RO Capacity—Libraries that meet all technical cable connectivity requirements, but whose cable system cannot presently accommodate any more activity on its satellite receiver(s), are grouped here. Should time become available in the future, these libraries are then technically able to advance to the usable facility group.
- NRO No CATV RO—Here are placed those libraries that are connected to an operational cable system. However, the cable system has no satellite receiving station and, therefore, no satellite access. In order to become a usable facility, these cable systems must install a satellite receiving station and be able to offer excess receiver capacity.
- NCC No CATV Connection—While a cable system with all the satellite hardware requirements may be operating in the library's area, these libraries are not connected to the cable system. Reasons given in the survey are varied including logistics, economics, and disinterest. Depending upon the technical status of the cable system, a

simple link may be all that is needed for the library to become a usable facility.

- NCA No CATV in Area—Libraries in this group are located in areas that presently have no operational cable system. Some areas are now in the franchising process, some have awarded franchises but are not operational, and others have no idea if and when cable service will come to their areas. Libraries here have the advantage of knowing what requirements are necessary for network participation and can use this information when franchising negotiations begin.
- NI No Interest—Here are grouped those libraries that are at various stages of technical capability, but have no desire to participate in a national satellite cable library network.

Table 1 illustrates responses according to geographical location. (Numbers refer to the quantity of libraries from each state that fit into the above defined categories.)

Exactly half of these respondents are usable facilities. The largest hindrance to network participation is lack of connectivity between the library and the cable system.

LIBRARY/CABLE CONNECTIVITY

Part one of this survey established the degree of connectivity between libraries and their local cable companies. PSSC's major concern was to find libraries wired to at least *receive* cable programming. PSSC also discovered that the highest percentage of libraries had two-way connection, usually for the purpose of cablecasting. Connectivity among the 86 respondents was broken down as follows (all percentages have been rounded off):

- 33 (39%) two-way interconnection (transmit and receive video)
- 29 (34%) one-way CATV drop (receive only—regular subscriber)
- 14 (16%) no CATV connection
- 9 (10%) no CATV in my area or presently operational in my area
- 1 (1%) no answer to question

Other questions in this section profiled the technical capabilities of the cable system. Specific hours of each day of the week a satellite receiver was available for occa-

Table 1.

State	Total State Respondents	UF	NXC	NRO	NCC	NCA	NI
Alabama	0—NO RESPONSE						
Alaska	3				1	2	
Arizona	1					1	
California	5		1	1	3		
Colorado	2	2					
Connecticut	4	1		1	1		1
Florida	1	1					
Georgia	1	1					
Hawaii	1				1		
Idaho	0—NO RESPONSE						
Illinois	2	2					
Indiana	1	1					
Iowa	2	2					
Kansas	2	1					1
Kentucky	3	3					
Maryland	1			1			
Massachusetts	2	1				1	
Michigan	2				1		1
Minnesota	11	7			2	2	
Missouri	1	1					
Nevada	1	1					
New Jersey	4	1		2		1	
New York	14	5	3	3	2		1
North Carolina	2	1	1				
North Dakota	0—NO RESPONSE						
Ohio	1	1					
Oklahoma	0—NO RESPONSE						
Oregon	2				2		
Pennsylvania	2	2					
Tennessee	2	1			1		
Texas	2	1	1				
Utah	2	2					
Vermont	0—NO RESPONSE						
Virginia	4	2	1			1	
Washington	2	1					1
Wisconsin	3	3					
Wyoming	0—NO RESPONSE						
TOTAL	86	43	7	9	14	8	5

sional use were charted. Weekday mornings proved to be the most available time block.

It is also imperative for PSSC to know what transponders (channels) of the satellite cable systems can access. There are twenty-four transponders on SATCOM I, the main satellite used by cable. When PSSC coordinates a satellite telecast, time on a satellite transponder must be secured. Each transponder is leased to someone, such as Home Box Office (HBO), Ted Turner's Cable News Network, or the Appalachian Community Service Network

(ACSN), to name a few, for the carriage of their programming. Time needed by PSSC for a two-hour satellite event, for example, can be sublet from a transponder lessee, subject to availability. However, finding time slots on SATCOM I transponders is becoming increasingly difficult as many lessees are expanding the number of hours of their own programming. As a result, PSSC must know which transponders each cable system can receive so that an attempt can be made, where possible, to accommodate the majority of survey facilities.

The ideal situation is for CATVs to own

"frequency agile" satellite receivers; that is, receivers that can access *any* of the transponders. Some receivers can get only even-numbered transponders or odd-numbered transponders; others can access only certain individual transponders. Transponder accessibility is usually related to the type of programming the cable operator offers or plans to offer to the local cable subscribers, or to the age of the system. (Older systems often use twelve channel receivers, tunable to only even- or odd-numbered transponders on SATCOM I.) For example, if a cable operator does not anticipate offering anything besides HBO now or in the future from SATCOM I, often he/she cannot justify the need for a frequency agile receiver. Table 2 outlines transponder accessibility for usable facilities only.

This abundance of frequency agile receivers will provide the connected libraries with a greater amount of flexibility in receiving programming since their participation will not be dependent upon a certain transponder.

Another question probed the availability of provisions for closed-circuit, discrete delivery of satellite transmissions from the cable system's receiver into the library. Being able to provide closed-circuit capabilities would ensure the privacy of a satellite telecast. Some PSSC clients insist that their transmissions be safe-guarded through closed-circuit delivery.

As expected, closed-circuit arrangement does not exist between very many libraries and their CATVs. Unless part of an institutional cable loop, most libraries cannot presently be singled out for closed-circuit cable reception. Under normal conditions, what is transmitted from the head end of the cable system travels to everyone subscribing to the cable service. Eleven of the forty-three usable facilities claimed closed-circuit capabilities are currently available. Those thirty-two without described what technical considerations must be present before such provisions could be offered. These technical requirements included scrambling devices, mid-band channel usage, modulators and demodulators. Such upgrading of the cable company's hardware was quoted as costing from hundreds to sev-

eral thousands of dollars. No CATV indicated willingness to assume the expenses for such special capabilities, but a few did offer to investigate the possibility of temporary special links on a per-occasion basis.

LIBRARY FACILITIES

The survey also asked about the library's facilities. Information in part two centered on library accommodations and equipment. Answers here provided a description of each library, which gave PSSC an idea of how adaptable to hosting satellite teleconferences each might be.

A basic satellite program viewing facility consists of the viewing area, equipped with chairs and tables, at least one television monitor (wired to receive the cable pro-

Table 2.

Transponder #	# of Facilities Able to Access Transponder
1	2
2	2
3	1
4	1
5	1
6	4
7	3
8	3
9	6
10	3
11	0
12	2
13	1
14	3
15	0
16	3
17	1
18	1
19	0
20	2
21	3
22	4
23	0
24	5
Frequency Agile	30
Not Sure	4

NOTE: These figures are for transponder accessibility on SATCOM I. Numbers for the specific transponders were tabulated from those surveys that indicated their satellite receivers were *not* frequency agile, but rather could access only those transponders they had listed.

gramming), and, for interactive programs, a telephone. Survey libraries reported they had conference rooms, auditoriums, and classrooms available for viewing satellite telecasts. The number of viewers able to be accommodated at one time ranged from 6 to 400, with the average facility holding 75 people. Some libraries could provide simultaneous viewing in more than one room, which increased the total number of people they could accommodate for a single event. A majority of the libraries had more than one monitor; some as many as fifteen monitors. Three libraries indicated they owned a large-screen television projector. Forty-four percent of the usable facilities have no phones in the viewing rooms, but many explained that phones were either nearby or could be temporarily installed for an interactive event. In response to a question about the location and accessibility of the library within its community, the general comments described the majority of the libraries as being in a convenient part of town, with ample parking and barrier-free design. When given enough advance notice, most libraries were willing to schedule an event at any time, even during hours and on days the library was normally closed to the public.

Traditionally, as a part of its standard networking service, PSSC rents viewing facilities for the client, whether they are public television stations, hotels, or other facilities. Libraries, as another type of viewing resource, would be entitled to receive payment for use of their facilities. Obviously, this fact treads on controversial "fee or free" waters. Being aware of this, PSSC asked the libraries whether they could accept money for these purposes; and, if not, whether they might have some other mechanism, such as a "Friends of the Library" group, to which the money could be given instead. Those libraries that said they could accept money directly for the use of their facilities numbered thirty-four. Oddly enough, thirty-four libraries also said they could *not* accept money directly for the use of their facilities. Of that group, thirty-one indicated they did have a "Friends of the Library" or similar group to which money could be given for indirect channeling back into the library. Eighteen libraries did not answer this ques-

tion (many due to libraries not completing the entire survey once they felt the cable information made them technically ineligible for participation). Only three libraries might have a problem with financial arrangements for an event.

PROGRAM INTERESTS

The final section of the survey (part three) gave each respondent the opportunity to list topics of interest to the library and community that could be presented via a satellite video-teleconference. General comments identified continuing education, organizational conferences, training, seminars, workshops, media distribution, and information dissemination as major activities suitable for satellite-assisted delivery and distribution. Special target audiences included the following:

1. senior citizens
2. handicapped
3. minorities
4. the disadvantaged (economically, educationally, socially)
5. the abused (drug addicts and alcoholics; abused children and spouses, teachers and students; victims of crime; and the sexually harrassed)
6. the institutionalized (in hospitals, prisons, nursing homes, mental health centers, hospices)

These special patrons are often served through outreach programs and were named here as potential beneficiaries of satellite programming. The most frequently named special population was the elderly, with suggestions for retirement, social services, nursing-home care, insurance, and other senior-oriented programming.

Three major classes of other potential users of satellite video-teleconferencing in the library were identified:

1. Education-oriented: Preschool and nursery students; elementary, middle, junior high, and high school students; postsecondary and graduate students; vocational, technical, extension, and cooperative education students; special education students; adult and continuing education students; educational administrators, faculties, and staff
2. Government-oriented: Federal, regional, state, county, and local govern-

ment officials and employees

3. Employment-oriented: Professional/nonprofessional; salaried/hourly; union/nonunion; management/staff; public/private sectors; employed/unemployed; full/part-time; permanent/temporary; big/small business; human services/trade

Particular topics of interest felt to be ideal satellite program areas within each library's community included the following (appearing in no rank order):

- energy (solar and natural resources)
- consumerism
- community services
- environment
- historic preservation/oral history
- legal aid
- librarianship
- computers, data processing
- technology
- communications/telecommunications
- fund raising
- safety
- recreation, physical education, sports, parks
- language (bilingual, sign, foreign, literacy)
- economics and finance (investment, banking, inflation, budgeting)
- conservation
- genealogy
- religion
- business and industry
- civil defense
- agriculture and forestry
- health and medicine
- mental health
- arts and humanities
- curriculum sharing
- therapy and rehabilitation
- real estate

Several local associations, who have affiliates or branches located nationally, were listed as potential users of satellite video-teleconferencing (in order of popularity):

1. American Association of Retired Persons
2. League of Women Voters
3. Historical Societies
4. American Library Association
5. Chamber of Commerce
6. American Association of University Women

7. Parent/Teacher Associations
8. Councils of Government
9. Jaycees
10. Boy Scouts
11. Friends of the Library

Three questions concerning interest and ability to participate in future satellite video-teleconferencing activities were asked. The questions, vital to the outcome of this survey, are reiterated here with their respective answers:

1. Would you be interested in helping set up one or more of these specialized teleconferences?

Yes	63	(73%)
No	10	(12%)
Maybe	5	(6%)
No Answer	8	(9%)

2. Would you be interested in doing a local follow-up program after a national teleconference that is of interest to your community?

Yes	65	(76%)
No	6	(7%)
Maybe	8	(9%)
No Answer	7	(8%)

3. Periodically, nationally based organizations sponsoring teleconferences or special programs enlist promotional and site arrangement support from local site facilitators. Would you like to be listed as available to provide this support?

Yes	54	(63%)
No	18	(21%)
Maybe	3	(3%)
No Answer	11	(13%)

The interest of the libraries surveyed is well documented in questions one and two. However, their ability to presently participate is limited to financial and personnel resources as demonstrated by question three's responses.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

The majority of surveyed libraries recognize the need for libraries to expand their community service roles through some use of telecommunications. Many of the 86 libraries indicated the concept of libraries becoming satellite program viewing facilities through their cable connectivity was an idea so new to them that they could not fully

understand or visualize what would be expected of the library in this novel role. Yet the general consensus was that if joining with their cable systems to provide satellite programs receiving locations was a method of improving community library services, while not making demands on the library's budget, then the concept was worth exploring individually on an operational basis.

To illustrate this concept of the CATVLIB as a satellite program viewing facility, a typical scenario would find participating CATVLIBs contacted by an organization or networking agent who wishes to reach the general community or a special segment with its satellite-transmitted programming. The CATVLIB, as the community contact, would have the option to respond negatively or positively. If the CATVLIB is interested, it must begin performing local coordination duties, most important of which is garnering the agreement of its cable system. CATVLIB and cable system discussions will determine five things:

1. Can the cable system access the satellite transponder on which the programming will be carried?
2. Will the cable system have a satellite receiver available on the date and time of the program?
3. Will the CATVLIB have its viewing facility available on the date and time of the program?
4. If desired by the program's sponsor, will the CATVLIB contact the local group who is to participate in the program and work with them prior to the satellite telecast to the extent needed by the requesting organization?
5. Can the cable system and/or the CATVLIB handle special program considerations, if any? For example,
 - provide closed circuit capability in the CATVLIB?
 - tape the program?
 - provide telephone(s) for interactive programs?
 - provide local site facilitation?
 - coordinate local follow-up activities?
 - provide refreshments?
 - coordinate advance publicity within the community?

Once the CATVLIB has determined whether or not it is able and desires to offer their services, the CATVLIB would be recorded as a satellite program "receive site." The CATVLIB will then assume the degree of local responsibility requested and contracted by the requesting organization, including all negotiations necessary with the cable system.

While there were survey indications of general support for such a national satellite cable library network, what are the pros and cons of its operation?

Pros

Pre-existing conditions. CATVLIBs need no investment for hardware, but merely take advantage of pre-existing cable connectivity.

Community service. Such CATVLIB participation potentially offers service to every member of the community.

Outreach to new patrons. Those community residents not previously using the library may find this new service applicable to their needs.

Economics. CATVLIBs could recoup any charges incurred through this service, as well as expect payment as a rented receive site.

Program interaction. Live satellite programming has the advantage over taped programming of allowing the option of offering viewers the opportunity to interact with the program's presenter(s).

Resource-sharing potential. This service has the future potential of providing CATVLIBs with an alternative method of accessing new information resources and data bases. Human resources can be shared now through this service.

Potential CATV expansion. More CATVs are expanding and upgrading their satellite access capabilities as usage of satellites by cable programming vendors increases. Some CATVs have already purchased WESTAR III hardware in addition to their SATCOM I hardware.

Future implications. If satellite-related services become valued by the community, the residents might decide the CATVLIB should have its own satellite hardware so that the community could take advantage

of more programming available directly from satellite.

Cons

Lack of SATCOM I occasional time. It is becoming increasingly difficult to sublease transponder time on this satellite for occasional satellite programs.

Dependency. The CATVLIB must depend entirely on the cable system to be able to be a network participant and offer this service. CATVLIB participation is dependent upon the cable system's satellite access capabilities, which generally means SATCOM I only.

Lack of CCTV. Generally, most CATVLIBs cannot offer closed-circuit capability, so absolute privacy cannot be guaranteed to the program's sponsor.

CATVLIB policies. Some CATVLIBs will have to make decisions about various controversial items, such as:

- accepting money for use of facilities.
- allowing some clients the right to limit viewing to only registrants.
- hosting controversial groups.

Range of CATVLIB capabilities. The survey demonstrated that CATVLIBs cannot all offer the same degree of service due to the wide range of technical capabilities. At present, each satellite event would have to be judged individually to determine which CATVLIBs were equipped to participate.

A glance at the pros and cons of marrying libraries and satellite communications through cable connectivity suggests a national satellite CATVLIB network is a presently available and usable resource with potential for future expanded capabilities and unlimited programming uses. The obstacles imposed by the cons, however, are cause for a serious and objective look at the present and future viability of such a network.

Popular present uses of satellite videoconferencing are for telecasting continuing education and organizational conference interactive programming to special audiences. Some PSSC clients will often request to:

- charge his/her special audience for participating (course or conference fees, for example).
- have the satellite-transmitted event

closed-circuit telecasted to the receiving locations only.

- reach specific geographical locations (often large urban areas, such as New York or Los Angeles).

CHARGING SPECIAL AUDIENCES FOR CLOSED-CIRCUIT SATELLITE EVENT

The first two client requests are often related. If the client intends to charge the registrant-viewer a fee, he/she often expects the program to be viewed only at designated receive sites that are hosting the paying participants. (Why should a viewer pay if he/she could watch the same program at home on a cable channel for free?) Obviously, those clients interested in a "box office" approach to their event, that is, to make a profit rather than offer a service, are not suited for CATVLIB network use. However, how can the CATVLIBs accommodate those public service groups which must recoup expenses in order to offer such satellite program services?

Client-designed incentives such as giving the phone number for viewer interaction in a program only to the CATVLIBs rather than displaying or announcing the number during the program; requiring participants to have special materials and/or integrating local pre- or postevent activities in the CATVLIBs with the program; even offering course credit to registrants only are manageable alternatives for those CATVLIBs that cannot terminate the program in their facilities only. Some CATVLIBs may be able to negotiate with their CATV for the provision of the necessary equipment to provide closed-circuit capabilities. However, this survey did not identify many CATVs that were willing to cooperate with the libraries to that extent.

For those CATVLIBs whose policies restrict their involvement with financial transactions, particularly money exchange among library patrons, advance registration fees paid directly to the client could enable the libraries to avoid being required by the client to "collect at the door." Most libraries, however, by their very nature, cannot prohibit anyone from viewing a program within their facilities, thereby making it generally impossible for them to guar-

antee the client their requested selective audience.

SIZE, LOCATION, AND DISTRIBUTION OF RECEIVE SITES

Video-teleconference users generally want to reach as many of their members or special populations as possible, yet they must pay to rent *each* receive site. Economics influence their attempt to reach more people at fewer locations, not necessarily those most in need of the program. Therefore, it is no surprise that popular receive sites are located in heavily populated cities.

While cable television is finally coming to urban areas, present conditions find a lack of operational CATVs available. The typical CATVLIB *now* is located in a smaller city or rural area. Large states, such as California and Texas, have little or no CATVLIB representation. Only twenty-three states currently have a usable CATVLIB facility, which makes the network descriptor "national" not quite accurate. Expanding the CATVLIB network to include more and larger cities and all states is a must to make it competitive with other satellite networks available to a client. But even if the network is able to expand, the previously mentioned inability of CATVLIBs to provide closed-circuit capabilities will lessen its desirability as a resource when that capability is offered by another satellite ground facility in the same city.

One competitive alternative a CATVLIB can consider is rental cost. Clients expect to pay a reasonable rate for the use of each facility. This rate differs among different types of satellite networks, and even within the same network. For example, renting a public television station is generally less expensive than booking a hotel. Yet the rate for two public television stations can vary in the hundreds of dollars. If a CATVLIB chooses to offer its facilities for free, asking only for compensation on any expenses it might incur because of the satellite event or charges a minimal amount, their facility becomes economically attractive. One factor the CATVLIBs must not overlook when contemplating such a decision is the *cable*

system. Will the cable system expect remuneration for its services, especially if the CATVLIB is receiving payment? Libraries must remember they have entered into a cooperative arrangement with their CATVs in order to become a satellite program viewing facility.

TOWARD FUTURE INDEPENDENCE

While a skeletal cable library network does technically exist, it is *imperative* that libraries work toward their own future independence before they can truly establish themselves as a viable satellite network. Evolution of a CATVLIB network to a satellite library network might include the following two steps:

1. *Expanded CATVLIB network*. The survey instrument should now evolve into an interview tool for profiling additional libraries to become part of this network. Efforts should be made to encourage libraries within poorly represented states to join the network if technically feasible. Expansion is urged for two main reasons:

- To allow *libraries* the opportunity to *experience* being a satellite program viewing facility without financial obligations.
- To allow *community residents* the opportunity to *experience* a library service with great potential for all local population segments.

Once the library is regarded as the logical place for community communications, it will be much easier to begin a community drive toward supporting the outfitting of the library with the proper hardware necessary to function in that capacity.

Requirements for becoming part of the expanded CATVLIB network include:

- At least one-way connectivity between the library and the CATV. (A typical subscription for basic service will suffice.)
- The CATV must have a satellite receiving station.
- The CATV must have excess capacity available on its satellite receiver.
- CATV must be willing to cooperate with the library in providing satellite

reception of occasional satellite telecasts.

- Library must have at least one viewing room available to seat those viewing the satellite program.
- Library must have at least one television monitor, wired to receive cable programming, available in the viewing room.
- Library must be willing to assume role of community contact to extent requested by client. (Need is for library interest in participating in these occasional satellite telecasts; degree of local responsibility can be negotiated.)

Even though this network is designed to be a temporary method of allowing library participation in satellite communications, future implications could find these libraries expanding, improving, or beginning cablecasting on a library-designated cable channel. Thus, libraries deciding whether they should become involved with a temporary network might contemplate the related activities available from library/cable system cooperation.

2. *Satellite Library Network.* At some point in the not too distant future, libraries will be faced with the decision of becoming independent from their cable system and obtaining their own satellite hardware. A library with its own satellite receiving station will become more desirable to more users as a receive site for a satellite video-conference since it will be more

flexible and autonomous. Besides satellite video-conferences, libraries could investigate other uses of their satellite hardware including:

- direct satellite access (with permission recommended) for cable television fare;
- reception of nationwide satellite distribution of taped video programming for library use;
- facilitation of various library data communications.

If the library is able to prove the value and practicality of having community satellite access capabilities located at its facilities to the residents through participation in the CATVLIB network, local funding of a satellite library project might be realistic. If corporations are made aware of how such a satellite library facility could benefit their own communications needs, a corporate grant could prove to be another funding route. Other sources of support must also be explored.

FINAL WORD

As a result of this survey, PSSC has profiled cable libraries of all technical capabilities for input into a database of network resources. However, the limitations of a CATVLIB network have been noted. Effort will be made by PSSC *where appropriate* to use this network for client satellite telecasts. PSSC will continue to profile interested cable libraries for addition to the network, *upon request of the library.*

Statement of Ownership and Management

Journal of Library Automation is published quarterly by the American Library Association, 50 E. Huron St., Chicago, IL 60611. Annual subscription price, \$15. American Library Association, owner; Brian Aveney, editor. Second Class postage paid at Chicago, Illinois. Printed in U.S.A. As a nonprofit organization authorized to mail at special rates (Section 132.122, *Postal Service Manual*), the purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes have not changed during the preceding twelve months.

Extent and Nature of Circulation

("Average" figures denote the number of copies printed each issue during the preceding twelve months; "Actual" figures denote number of copies of single issue published nearest to filing date—the June 1981 issue.) Total number of copies printed: Average, 6,869; Actual, 7,345. Paid circulation: not applicable (i.e., no sales through dealers, carriers, street vendors, and counter sales). Mail subscriptions: Average, 6,076; Actual, 6,308. Total paid circulation: Average, 6,076; Actual, 6,308. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies: Average, 432; Actual, 446. Total distribution: Average, 6,508; Actual, 6,754. Copies not distributed: Office use, left over, unaccounted, spoiled after printing: Average, 361; Actual, 591. Returns from news agents: not applicable. Total (sum previous three entries): Average, 6,869; Actual, 7,345.

Statement of Ownership, Management and Circulation (PS 3526, June 1980) for 1981 filed with the United States Post Office Postmaster in Chicago, September 30, 1981.

News and Announcements

First Use of CATVLIB Network: American Red Cross Satellite Telecast

On May 21, 1981, the American Red Cross celebrated their one-hundredth birthday by ending their annual conference in Washington, D.C., with a special two-hour nationwide satellite telecast. The PSSC coordinated distribution of the telecast, which originated from Constitution Hall in Washington, D.C., from 10 a.m. to noon. The program was carried on SATCOM 1, transponder 16 (Appalachian Community Service Network), and made available to all cable systems able to receive this transponder. Those areas not able to schedule the live program were offered a satellite-transmitted taped feed later in the day. The American Red Cross had encouraged all its local chapters to initiate program reception in their communities by approaching the local cable system about carrying the event.

Since the American Red Cross was offering a *free* program and trying to saturate as much of the United States as possible, use of the CATVLIB network in conjunction with this telecast was appropriate. PSSC contacted 53 libraries in 23 states that were interested in assuming local coordination for bringing this event to their communities. As the local coordinator, the CATVLIBs' minimum responsibilities included alerting the cable systems to schedule receiving this program (if the local Red Cross chapter had not already approached the CATV) and contacting the local Red Cross chapter to offer the CATVLIBs' facilities for their group viewing and concomitant local celebration.

Of these fifty-three CATVLIBs, only seven could not participate because of *technical* problems. Schedule conflicts; lack of CATV, Red Cross, or community interest; and Red Cross alternative plans were the major factors in prohibiting twelve others

from directly participating in hosting the satellite-transmitted program. The remaining thirty-four CATVLIBs did host community residents in their facilities.

Evaluation forms revealed a variety of degrees of CATVLIB participation in coordinating their first satellite event participation. Several CATVLIBs (though none came to the library for viewing) were instrumental in getting the program into the community and available to all local cable subscribers. Advance publicity, birthday cakes and refreshments, sing-alongs, taping for multiple showings, and joint library/chapter pre- and postevent activities are but a few of the ways the individual CATVLIBs participated. All of the evaluation forms indicated that the CATVLIBs wanted to be contacted as a potential local site for future satellite events.

The following list names the fifty-three CATVLIBs that were initially contacted to be local coordinators for the Red Cross one-hundredth birthday satellite telecast. Though not all were successful, CATVLIB made an effort to bring the program to its community.

Colorado

Boulder Public Library, Boulder

Connecticut

Thomaston Public Library, Thomaston

Florida

Tarpon Springs Public Library, Tarpon Springs

Georgia

Tri-County Regional Library, Rome

Idaho

Pocatello Public Library, Pocatello

Illinois

Pekin Public Library, Pekin

Rockford Public Library, Rockford

Indiana

Fort Wayne Public Library, Fort Wayne

Monroe County Public Library,

Bloomington

Iowa

Kirkwood Community College
Telecommunications Center, Cedar
Rapids

Iowa City Public Library, Iowa City

Kansas

Abilene Public Library, Abilene
Newton Public Library, Newton

Kentucky

Lexington Public Library, Lexington
Louisville Public Library, Louisville
Camden-Carroll Library, Morehead State
University, Morehead

Massachusetts

Greenfield Community College Library,
Greenfield
South Hadley Library System, South
Hadley

Minnesota

Anoka County Library, Fridley
Cloquet Public Library, Cloquet
Crow River Regional Library, Willmar
International Falls Public Library,
International Falls

Minnesota Valley Regional Library,
Mankato

Marshall-Lyon County Library System,
Marshall

Western Plains Library System,
Montevideo

Rochester Public Library, Rochester

St. Cloud Public Library, St. Cloud

Missouri

St. Charles City County Library, St. Peters

New Jersey

Burlington County College Library,
Pemberton

New York

Albany Public Library, Albany
Amherst Public Library, Williamsville
Bethlehem Public Library, Delmar
Chautauqua-Cattaraugus Library System,
Jamestown

Gates Public Library, Rochester

Mid-York Library System, Utica

Ridge Road Elementary School Library,
Horseheads

North Carolina

Davidson County Community College
Library, Lexington

Ohio

Greene County District Library, Xenia
Public Library of Columbus and Franklin
County, Columbus

University of Toledo Library, Toledo
Pennsylvania

Altoona Area Public Library, Altoona
Lancaster County Library, Lancaster
Monroeville Public Library, Monroeville
Tennessee

Memphis/Shelby County Public Library &
Information Center, Memphis

Utah

Merrill Library and Learning Resources
Program, Utah State University, Logan

Weber County Library, Ogden

Virginia

Arlington County Department of
Libraries, Arlington

Washington

Edmonds Community College Library,
Lynnwood

Lynnwood Public Library, Lynnwood

Mountlake Terrace Public Library,
Mountlake Terrace

Seattle Public Library, Seattle

Wisconsin

Middleton Public Library, Middleton
Nicolet College Learning Resource Center,
Rhineland

Who's Who and What's What in Library Video and Cable

For librarians interested in who is doing what in video in libraries, or in how to do it themselves, a guidebook has been published by the Video and Cable Communications Section of the Library and Information Technology Association. It is the 461-page *Video and Cable Guidelines*.

Edited by Leslie Chamberlin Burk and Roberto Esteves—two of the most active librarians in the video field—the book includes papers from Donald Sager, Kandy Brandt, Arlene Farber Sirkin, Anne Hollingsworth, and by Burk and Esteves. Among the topics covered are a description of the present operation, future plans, problems, and benefits of video in 250 libraries in the U.S. and Canada.

The book is spiral-bound and can be used conveniently as a manual for staff development programs. Its price is \$9.75.

For additional information, or to order copies (prepaid orders only, please), contact LITA, ALA, 50 E. Huron St., Chicago, IL 60611; (312)944-6780.

ELMIG Electronic Mail Arrives

The "new arrival" to the library association family this summer is the Electronic Library Membership Initiative Group. ELMIG is an organization of individuals established to ensure that electronically delivered information remains accessible to the general public. ELMIG promotes participation and leadership in the remote electronic delivery of information by publicly supported libraries and nonprofit organizations.

The group's efforts are coordinated by Richard Sweeney, director of the Public Library of Columbus and Franklin County; Neal Kaske, director of OCLC's Office of Research; and Kenneth Dowlin, director of the Pikes Peak Library District.

The first founding goals of ELMIG are:

- Identifying services and information best suited for the remote electronic access to and delivery of information;

- Planning, funding, and developing working demonstrations of library electronic information services;

- Communicating the availability of electronic library services to the community;

- Informing the library profession of trends, specific events, and future directions in remote electronic delivery of information;

- Creating coalitions with organizations in allied fields of interest.

Organizers of ELMIG are working within ALA to foster interest in, and facilitate the needs of, the electronic library. ALA has established a membership initiative group to address the concerns of this group. The Electronic Library Membership Initiative Group will meet during the ALA Midwinter Meeting in Denver. Interested individuals are encouraged to attend the meeting scheduled for Monday, January 25, 1982, at 2 p.m. in Room 2E of the auditorium.

Interest in ELMIG/ELA has surfaced quickly. The membership group was formed in March, and gathered the 200 signatures needed for official recognition at the ALA Annual Conference in San Francisco. Some 150 people met at that conference to discuss topics of concern. They decided to continue these discussions at the

1982 Midwinter Meeting and plan for an ELMIG program to be presented at Philadelphia.

ELMIG aims to address the issues concerning the electronic library on a continuing basis through ongoing interaction of its members. To facilitate this interaction, ELMIG will use an electronic mail system. Further information on ELMIG and its members is available from Richard Sweeney at the Public Library of Columbus and Franklin County, 28 S. Hamilton Rd., Columbus, OH 43213.

See page 317 for Subscriber Agreement Form.

Heynen to Head**ARL Microform Project**

The Association of Research Libraries has hired Jeffrey Heynen to head a two-year program designed to improve bibliographic access to microform collections in American and Canadian libraries. The association has received \$20,000 from the Council on Library Resources to initiate the project, and additional funds are anticipated from other sources.

Heynen brings an extensive background in micrographics and publishing to the project as well as a long-standing commitment to improving the treatment, use, and bibliographic control of microforms in libraries. He has served as chair of the American Library Association's Reproduction of Library Materials Section, and was a participant in earlier groups that laid the foundation for the current ARL project. Currently president of Information Interchange Corporation, Heynen has held executive positions with Congressional Information Service, Greenwood Press, and Redgrave Information Resources. These positions have all included responsibility for the creation of large microform collections. Heynen holds memberships in numerous standards-making bodies, including the International Organization for Standardization (ISO), the American National Standards Institute, and the National Micrographics Association, and is a lecturer at the University of Maryland College of Library and Information Services.

The ARL Microform Project is based upon a planning study conducted for the association by Richard Boss of Information

Systems Consultants, Inc. Its purpose is to stimulate and coordinate the work of libraries, microform publishers, bibliographic utilities, and regional networks in providing bibliographic access to millions of monographic titles in microform that are now inadequately or insufficiently cataloged. Since the development of the plan during 1980, there has been keen interest both in the elements of the plan and in the cooperative efforts needed to achieve them. A number of libraries—both ARL and non-ARL members—are planning to begin or are already entering catalog records for individual titles in microform sets into bibliographic databases. For example, three ARL libraries have recently been awarded grants under Title II-C of the Higher Education

Act, Strengthening Research Library Resources, to catalog major microform sets, entering the resulting records into one of the major utilities. All three libraries—Stanford University, University of Utah, and Indiana University—will be coordinating their efforts with the goals of the ARL program.

Key to these efforts, however, is coordination to ensure that national standards are accepted and followed, to distribute the work load so that as many sets as possible are covered and duplication of effort is avoided, and to ensure that the records are available to all libraries that want to use them. The ARL Microform Project will emphasize building on existing resources, coordinating efforts among the library and pub-

SUBSCRIBER AGREEMENT
ELECTRONIC LIBRARY MEMBERSHIP INITIATIVE GROUP

_____(ALA Member), applies for membership in the ELECTRONIC LIBRARY MEMBERSHIP INITIATIVE GROUP, electronic mail system, and states that:

RECITALS:

- A. ELMIG is an association of individuals whose mission is to ensure that information delivered electronically remains accessible to the general public; and
- B. ELMIG seeks to promote participation and leadership in remote electronic delivery of information by publicly supported libraries and nonprofit organizations.

NOW THEREFORE, the above Member and OCLC agree that:

1. Member will deposit with OCLC a \$100 contribution toward the cost of electronic mail service and attendant expenses for the first year of operation, which is to commence January 1, 1982. The Member recognizes that the initial Member contribution may not be sufficient to pay for a year of operation and agrees, when invoiced, to make additional payments of \$100, or other agreed upon sums, to OCLC for the continuation of service.
2. OCLC agrees that by accepting Member deposits, it will secure electronic mail service for the Members of ELMIG; and
- 2.1 Will place Member deposits in a separate ELMIG account from which OCLC will pay the cost of the electronic mail service, U.S. postal mailings, and any other expenses incurred in the administration of EMS.
- 2.2 Will provide a year-end accounting of contributions and expenditures to Members within a reasonable time after December 31, 1981, and each year-end thereafter.

MEMBER: _____

BY _____

TITLE _____

DATE _____

lishing communities and the bibliographic utilities, and, where possible, facilitating cooperative projects already planned or under way.

Heynen will be assisted by an advisory committee composed of representatives of both ARL and non-ARL libraries, the major bibliographic utilities, and microform publishers. The ARL project will operate out of the office of Information Interchange Corporation, 503 11th St., SE, Washington, DC 20003; (202)544-0291. Libraries and publishers interested in participating in the project are urged to contact the project office.

Nominations Sought for LITA Award

Nominations are being sought for the Library and Information Technology Associ-

ation's Award for Achievement.

The award is intended to recognize distinguished leadership, notable development or application of technology, superior accomplishments in research or education, or original contributions to the literature of the field.

The award may be given to an individual or to a small group of individuals working in collaboration. Organized institutions or parts of organized institutions are not eligible.

Nominations for the award may be made by any member of the American Library Association and should be submitted by January 15, 1982, to Hank Epstein, LITA Awards Committee Chairperson, 1992 Lemnos Dr., Costa Mesa, CA 92626.

ARE THESE BOOKS ON YOUR SHELF?

The Special Library Role in Networks: Proceedings of a Conference

Robert W. Gibson, Jr., ed. 296 p. 1980 ISBN 0-87111-279-5 \$10.50

Reports on the current state of networking and presents a creative approach to special library involvement in network participation and management.

Special Libraries Special Issue on Information Technology and Special Libraries

April 1981, vol. 72, no. 2 \$9.00

The entire issue of this journal is devoted to the technological transformation of the information industry. Topics discussed are such advances as computer and telecommunications components, software developments, linking, and modes of access to information systems.

Bibliographic Utilities: A Guide for the Special Librarian

James K. Webster, ed. 32 p. 1980 ISBN 0-87111-280-7 \$3.75

A comparative study of the services offered by the four major North American online bibliographic utilities.

Total \$ _____

Send to:

Special Libraries Association
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New York State purchasers add appropriate state and local sales tax.

Book Reviews

More Joy of Contracts: An Epicurean Approach to Negotiation, by Kevin Hegarty. Tacoma, Wash.: Tacoma Public Library, 1981. 66p. \$10. Order from: Administrative Offices, Tacoma Public Library, 1102 Tacoma Ave. South, Tacoma, WA 98402.

Hegarty's book, the second edition of his original *Joy of Contracts* (American Library Association, Dallas, Texas, June 1979), has both strengths and weaknesses. The basic strength is one heck of a lot of information about how to negotiate and write a contract that will assure a library that it gets what it pays for from a turnkey automation system. The weaknesses involve the organization of the text, the writing style, the specific focus on automated circulation systems, and the physical format of the document.

First, the author has clearly fought his way through a contract negotiation for a turnkey "Computerized Library Circulation System." The first edition of this book was produced soon after that negotiation was completed. This second edition seems to be augmented on the basis of experience gained in living with the contract. The main text walks the reader through each element of a contract (e.g., terms of agreement, specification of governing law, schedule, acceptance testing, etc.), provides sample contract language and adds comments and recommendations for how to cope with specific problems (e.g., negotiation of system reliability standards, p. 3-4).

While the contract structure and the specification of contract elements may be useful, the real value of the book lies in the comments (e.g., the difference between two percent downtime and five percent downtime over one year is a system that is disabled for 140 additional hours). The practical value of these comments may be measured in wasted dollars, wasted staff hours, or frustrated library patrons. The section on system maintenance (p. 13-15)

alone, may be worth the cost of the book.

On the negative side of the ledger, the book is somewhat difficult to use, because of its organization. It is composed of a primary section—in outline form—on the elements of a contract between a library and a vendor, and seven secondary sections, including examples of plans, sub-agreements, and schedules (and a seventeen-item bibliography). That is all that appears in the table of contents and there is neither an introduction, an overview, nor an index. It is very difficult to find a specific topic of interest without skimming through the text itself.

Second, the body of the text is a mixture of sample (or recommended; it isn't clear) contract language (identifiable by use of the word "shall"), comments on the language of particular portions of the contract (sometimes labeled "comment" and sometimes not), and cross-references within the book itself (sometimes labeled "Note:"). The mixture of different elements—contract language, narrative, etc.—are sometimes confusing. Moreover, there are a number of small grammatical garbles which are slightly distracting. A bit of professional editing would make this document both more readable and more useful.

Third, Hegarty focuses on (or uses as an example; it isn't clear) automated circulation systems. This would be very useful if that is what the reader intends to buy. However, with a variety of other turnkey automated systems and sources for libraries on the market or soon to be made available (e.g., acquisitions, book fund accounting, cataloging, online bibliographic access), some language about how the contract should be redesigned or revised to account for different systems and services would have made the book more immediately useful to more readers.

Last, the book comes as a photocopy of a typed original, with a velo binding. The binding of the reviewer's copy broke apart

the first time it was opened. However, it should be possible to rebind or staple it together if this turns out to be a persistent problem.

On balance, for those about to negotiate a contract with a vendor of automated systems and services, the strengths of *More Joy of Contracts* probably outweigh the weaknesses. One gets what a contract says one will get; any help in writing a thorough, comprehensive, and airtight contract will be of use!—*Donald Thompson, University of California Systemwide Administration, Office of the President, Berkeley, California.*

Computer Science Resources: A Guide to Professional Literature. Compiled and edited by Darlene Myers. White Plains, N.Y.: Knowledge Industry Publications, 1981. 346p. \$59.50 (ASIS members: \$47.60), paperback. ISBN 0-914236-80-6.

This comprehensive guide to the English-language literature of computer sciences

covers books, journals, technical reports, indexing and abstracting resources, directories, dictionaries, handbooks, newsletters, software resources, proceedings, programming languages, and publishers. Its appendixes give information relating to career and salary trends, societies and associations, academic computer-center libraries, commercial fairs and shows, and Myers' draft of a proposed expansion of the Library of Congress classification for the computer sciences. As Meyers states in the preface, "The work is designed to serve the needs of researchers, managers, librarians, consultants and systems analysts in academic, corporate and governmental data processing centers."

Computer Science Resources, divided into ten main sections with five appendixes at the back, is on the whole easy to use. Since the book does not have an index, its table of contents becomes the key to information access. Its wide margins together with fairly large print make it very readable. However, its unconventional arrangement of entries—letter by letter ignoring conjunctions and prepositions instead of word by word—can be misleading. For instance, "Computers and Urban Society" is arranged ahead of "Computer Survey." The word "and" and spaces between words are ignored; resulting in *Computersurban. . .* filing before *Computersurvey*. This practice does not follow the traditional library principle "nothing files before something." The explanation of the idiosyncratic entry arrangement is only given in the preface. When people use a book for quick reference, they usually skip the preface and the introduction; some users will probably miss many terms as a result.

The book is international in scope, relatively up-to-date, and informative. English titles published overseas, foreign publishers, and trade fairs and shows pertaining to the computer industry are included in the directory. Most titles mentioned have been published since 1970 and many citations are as recent as 1980. The annotations for each entry in "Indexing and Abstracting Resources," "Directories, Dictionaries, Handbooks," and "Software Resources" are very informative. It would have been ideal

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if titles in the "Current Books" and "Computer-Related Journals" were also annotated to aid users in selecting the materials.

Subject headings and cross-references used in various sections of the book are not always consistent. For example, in the section "Current Books," there is a see reference from "A.I. (Artificial Intelligence)" to "Cybernetics/Artificial Intelligence/Robots," but none from "Artificial Intelligence." However, in the section "Computer-Related Journals," the heading is "Artificial Intelligence" with a see also reference to "Cybernetics; Robots," but no reference from "A.I. (Artificial Intelligence)." In the "Current Books" section, "Careers/Vocational Guidance" is used as a subject heading. In the "Computer-Related Journals" section, "Employment" becomes the subject. There is no cross reference from either heading to the other in either section.

In the "Computer-Related Journals" section, preceding and succeeding titles are linked by cross-references. The history of title changes is outlined whenever applicable under the entries for the current titles. This information is invaluable especially for librarians in identifying variant journal titles. Although there are see references under most former titles to current titles, some entries are omitted for previous titles. For example, *Infosystems* was formerly called *Management and Business Automation* and later changed to *Business Automation* with the merging of *International Business Automation* and *International Edition Business Automation*. Then there was *Business Automation News Analysis Edition* published

as a supplement to *Business Automation*. Surprisingly there are no see references under "Business Automation" and "International Edition Business Automation" to "Infosystems." Maybe it is because "Business Automation" is quite similar to "Business Automation News Analysis Edition" and "International Edition Business Automation" is similar to "International Business Automation" and would have appeared close together if not adjacent to one another. Again some users may miss the links to the current titles. It might have been better to include a separate list for ceased journals.

Computer Science Resources is the result of monumental effort and years of thorough research and careful planning. Its compiler and editor, Darlene Myers has been very active in the computer and information science field, and is the manager of the Computing Information Center at the University of Washington. The wealth of information in the book and the currentness of cited materials are the prominent strengths. The flaws mentioned earlier are minor if users read the preface and the introduction in each section first. This reference tool is strongly recommended for computer industry libraries as well as for medium-sized and large public and academic libraries. Although more current, it does not wholly supplant Ciel Carter's *Guide to Reference Sources in the Computer Sciences* (New York: Macmillan, 1974). Carter's entries are all annotated, and some of the citations are not included in the newer work.—Frances Lau, *Blackwell/North America, Beaverton, Oregon.*

Highlights of LITA Board Meetings

These highlights are published to inform division members of the activities of their board. They are abstracted from the official minutes.

1981 ALA Annual Conference
San Francisco

First Session
June 29, 1981

Board members present: S. Michael Malinconico, Brigitte L. Kenney, Barbara E. Markuson, Nancy L. Eaton, Kenneth J. Bierman, Bonnie K. Juergens, Marilyn J. Rehnberg, Helen Cyr, Heike Kordish, Donald P. Hammer.

LITA ELECTION RESULTS.

Vice-president/President-elect: Carolyn M. Gray
Director-at-Large: Hugh Atkinson
ALA Councilor: Bonnie K. Juergens
VCCS Vice-chairperson/Chairperson-elect: Mary H. Karpinski
VCCS Secretary: Patricia M. Paine
VCCS Member-at-Large: Leon L. Drolet, Jr.
AVS Chairperson: Anne T. Meyer
AVS Vice-Chairperson/Chairperson-elect: Louis R. Pointon
AVS Member-at-Large: Michael D. Miller
ISAS Vice-chairperson/Chairperson-elect: James C. Thompson
ISAS Member-at-Large: Sherrie Schmidt

EVALUATION OF ELECTRONIC MAIL PROJECT. The members of the board reviewed their experiences and impressions with the ONTYME Electronic Mail System. The general consensus was that the system was very good and everyone was pleased with it and wants to expand its use. The board has not yet used THE SOURCE, although we are now subscribers to the system.

Motion was made by Markuson, seconded by Rehnberg, and passed that: the electronic mail project be extended through the Midwinter meeting, 1982, with a total budget of \$2,000 from the inception of the project.

LITA'S REPRESENTATION ON ANSI X-3. X-3 is the American National Standards Institute Committee on Computers and Information Processing. Discussion included the mechanics of keeping the membership informed of proposed standards being considered, the large amount of time required of the representa-

tive to monitor, study, and disseminate the proposed standards, and the costs involved for LITA to support a representative.

Juergens requested that if a division-wide representative to X-3 is appointed that that person should also be made ex officio to the ISAS/TESLA Committee or be liaison to the chair of ISAS. No action was taken.

GOALS AND LONG-RANGE PLANNING COMMITTEE. Kenney announced that she had appointed an ad hoc Goals and Long-range Planning Committee chaired by George Abbott.

DIRECTORY OF LIBRARY SYSTEMS IN USE. The suggestion was made that a directory of the many automated systems in use in libraries would be very useful.

A motion was made by Markuson, seconded by Kenney, and passed that:

in response to inquiry about a directory to assist in identifying specific applications of technology in libraries, media, and information centers, that the Publications Committee explore the feasibility of an online LITA Directory of Library, Media, and Information Center Use of Technology. The investigation should consider format of description, potential of interactive online updating, and possible output byproducts, and should result in a draft RFP for consideration by the LITA board for review at Midwinter.

PRESIDENT'S PROGRAM AT PHILADELPHIA. Kenney announced her plans for the LITA President's Program at the Philadelphia ALA Annual Conference. She is planning to transmit by satellite to fifty receiving sites around the country an "ALA Sampler" of outstanding technically-based programs from the Philadelphia Conference and short vignettes of what ALA is all about. The subject of "On-line Catalogs" has been chosen for the President's Program and segments of it and the RTSD/LITA/RASD preconference institute on the same subject will be used. The program is intended for people who cannot get to ALA conferences. If not enough registration is received by the coming ALA Midwinter Meeting the whole activity would be cancelled.

ORAL HISTORY PROJECT. At the 1980 New York ALA Conference, the suggestion was made that in the future many of the pioneers in the field of library automation will pass off the scene and it was felt that it was LITA's responsibility to capture for posterity the ideas and philosophy of those people.

A motion was made by Kenney, seconded by Eaton, and passed that:

an ad hoc committee be formed to investigate an oral history project in all aspects and submit a detailed set of alternative approaches for the Board's consideration. The Library History Roundtable will be informed of the committee's activity and invited to participate.

Second Session June 30, 1981

Board members present: S. Michael Malinconico, Brigitte L. Kenney, Barbara E. Markuson, Nancy L. Eaton, Kenneth J. Bierman, Ronald F. Miller, Bonnie K. Juergens, Marilyn J. Rehnberg, Helen Cyr, Heike Kordish, Charles Husbands, and Donald P. Hammer.

LITA SECTION REPORTS: ISAS. Bonnie Juergens, chairperson of ISAS, reported that the section has approved three programs for the Philadelphia Conference. ASIS will be asked to cosponsor the program "Information Science, Computer Science, and Library Science: In Search of Common Ground". Another program is the "The Uses of Microcomputers in Medium-sized Public and Academic Libraries," and the third one will be a detailed analysis and comparison of the MARC format.

Juergens reported that the ISAS Retrospective Conversion Discussion Group and one of the same name in RTSD would like to combine.

A motion was made by Juergens, and passed that:

ISAS pursue appropriate steps to invite the RTSD section which currently hosts a discussion group on retrospective conversion to combine that discussion group with the LITA/ISAS Retrospective Conversion Discussion Group. The invitation to RTSD will include a specific description of mutual responsibilities.

ELECTRONIC LIBRARY MEMBERSHIP INITIATIVE GROUP. (Information report by Richard Sweeney, Public Library of Columbus and Franklin Co., Ohio; and Neal Kaske, OCLC.) Sweeney reviewed the discussions that took place at a meeting held in Columbus on March 23-24, 1981 concerned with the whole area of remote electronic access to information and its impact on the library field. The group concluded that its members want to have some input on a very immediate level on the direction technology goes and the direction the policies and issues go. Out of that meeting came a mission statement which is now the function statement of the ALA Electronic Library Membership Initiative Group (ELMIG). Sweeney read that statement and reported on the group's concern for the future of libraries when these remote systems become established. He commented on the large number of programs and meetings on these areas that are not coordinated and not really providing the leadership our field should be giving. The almost total lack of research on these areas was also commented on. The need for the associations to provide the leadership was stressed.

Several members of the LITA Board expressed interest in providing a "home" for ELMIG within LITA as many of LITA's interests are those of the MIG. Both groups are concerned with the same issues it was pointed out.

LITA SECTION REPORTS: AUDIO-VISUAL SECTION. AVS recommended that an audiovisual task force be established, which would include other ALA units, and would share information about their plans, and would try to avoid major schedule conflicts and overlaps.

A motion was made by Cyr, and passed that

LITA Board approve ad hoc LITA A-V Section participation in a broad-based Task Force involving RTSD, PLA, ACRL, AASL and others to coordinate audiovisual-related activities.

Cyr asked Board's sanction for a "A-V Interest Group Breakfast" where people could just socialize and talk together. This would be sometime in the future. The Board members had no objection.

MARBI COMMITTEE REPORT. Elaine Woods reported that the MARBI Committee is focusing more on the principles and the issues that need to be

addressed in the MARC format. The committee is current with L.C. proposals. MARBI has drawn up a shopping list of issues to be addressed and they are now working on some of them.

PUBLICATIONS COMMITTEE REPORT. Charles Husbands informed the Board that the Publications Committee feels it is time to change the title of *JOLA*. They have chosen a title of *Information Technology and Libraries*, and it is to be effective with the March 1982 issue. After discussion, a motion was made by Bonnie Juergens, and passed to that effect.

The matter of raising the subscription price of *JOLA* was discussed. Due to the fact that the division's subsidy to the journal will greatly increase next budget year, the motion was made by Ken Bierman, and passed that:

non-member prices for the journal of the Division be increased to \$20 for a one-year subscription and \$5.50 for a single issue, effective with March 1982, and that the published member subscription price be raised sufficiently to conform to postal regulation.

Husbands requested that various members of the *JOLA* Editorial Board be included in the LITA Electronic Mail system. Approved by the Board by consensus.

Husbands asked the Board to keep in mind the possibility of publishing some of the results of the oral history project in *JOLA*.

Brian Aveney asked the Board to allow him to investigate the possibility of putting the full text of *JOLA* online. It would be an experiment to see what people would do with it. The Board approved by consensus. Aveney will return with a final proposal later.

Other such ideas were discussed including the proposals to put the "headlines" from the *LITA Newsletter* on *THE SOURCE*, and to include the roster of LITA committees in the OCLC Address Directory. Arrangements are in process for both of these activities.

GOALS AND LONG-RANGE PLANNING COMMITTEE. George Abbott, chairperson, asked the Board's permission to include his committee on LITA's electronic mail system. The intent would be to use it for text editing of committee documents. Board approved by consensus.

Abbott reported that the committee expects to hold open hearings at Midwinter and to have a basic document for discussion at that time.

Third Session June 30, 1981

Board members present: S. Michael Malinconico, Brigitte L. Kenney, Ronald F. Miller, Kenneth J. Bierman, Marilyn J. Rehnberg, Heike Kordish, and Donald P. Hammer.

BYLAWS AND ORGANIZATION REPORT. There have been seven changes to the LITA bylaws that Kordish will prepare in text form for the Board to act on at Midwinter in time for the spring ALA ballot.

ALA PRIORITIES SURVEY. Ron Miller reported that the ALA Executive Board took action on the ALA priorities and there are five of them. Briefly, they are

access to information, legislation and funding, intellectual freedom, public awareness, and personnel resources.

JOINT COUNCIL ON EDUCATIONAL TELECOMMUNICATIONS. Lynne Bradley reported that JCET has established a task force to bring information to its members about the new technologies and how they can best be used in education. Since LITA members have much of the necessary expertise, Bradley suggested that LITA organize a one-day program for JCET. Some Board members were very much interested and Bradley was asked to work with the LITA Program Planning Committee to organize such a program.

PROGRAM PLANNING COMMITTEE. Sue Tyner reported that the Telecommunications Committee will hold a preconference institute at the Philadelphia Annual Conference called "The Teleconference Center." It is intended to teach librarians how to set up a teleconference center.

The LITA group that has been putting on the "Data Processing Specifications and Contracting" workshops has been asked to hold a workshop prior to the IFLA meeting. Malinconico suggested that the Board adopt a policy of LITA costs plus 15 percent, but that a subcommittee of the LITA Program Planning Committee should be set up to define policy in this area. Carolyn Gray was suggested as a person for this committee.

Marilyn Rehnberg, chairperson of VCCS, reported a request from National Audio-Visual Association asking LITA to put on a "Video Showcase" for the seminar part of the NAVA Annual Conference in Anaheim in January.

*LITA BOARD OF DIRECTORS MEETINGS
RECORD OF VOTES—1981 ANNUAL CONFERENCE*

<i>Board Member</i>	<i>Motions (In order of appearance in the "Highlights")</i>							
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>
S. Michael Malinconico	Y	Y	Y	Y	Y	Y	Y	Y
Brigitte L. Kenney	Y	Y	Y	Y	Y	Y	Y	Y
Barbara E. Markuson	Y	Y	Y	Y	Y	Y	Y	Y
Nancy L. Eaton	Y	Y	Y	Y	Y	Y	Y	Y
Kenneth J. Bierman	Y	Y	Y	Y	Y	Y	Y	Y
Ronald F. Miller	O	O	O	Y	Y	Y	Y	Y
Angie W. LeClerq	O	O	O	O	O	O	O	O
Helen Cyr	Y	Y	Y	Y	Y	Y	Y	Y
Bonnie K. Juergens	Y	Y	Y	Y	Y	Y	Y	Y
Marilyn J. Rehnberg	Y	Y	Y	Y	Y	Y	Y	Y

KEY: Y = Yes A = Abstain O = Absent

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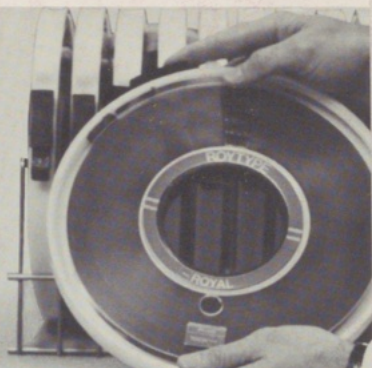
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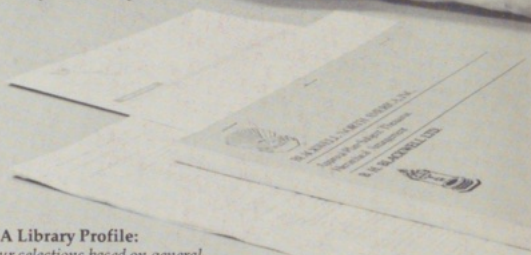
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