

# Cataloging with OCLC and RLIN: a Comparative Analysis

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Whether cataloging copy is obtained through the NUC, Brodart, online, or divine revelation, it accounts for about three-quarters of the cataloging done in a medium to large academic library. Cataloging with copy naturally poses a set of problems for the local catalog into which it must be integrated.<sup>1</sup>

This paper will compare OCLC and RLIN in five areas: 1) historical development; 2) file structures and search capabilities; 3) costs and managerial ramifications; 4) available subsystems and predicted future developments; and 5) the increasing standardization of the bibliographic description in the West and how these systems relate to it.

## Historical Development

When, on 26 August 1971, after four years of planning, the Ohio College Library Center began providing online cataloging for a number of Ohio libraries, a new era began for technical services. The original goal of OCLC was to provide "... a regional library network through which many libraries—rather than many departments of a single organization—would share the system."<sup>2</sup> As it began operations, OCLC's membership was limited to fifty Ohio academic libraries which bore half of the costs of operations while the state of Ohio bore the other half. During the next six years representatives of Ohio institutions continued to govern OCLC, while its president and founder, Frederick G. Kilgour changed from an academic librarian to a manager of a \$20,000,000 a year corporation. OCLC staff growth also reflects the enormous success of the system: from Kilgour and one secretary in 1967 to a central staff of 400 in mid-1979. Likewise, system hardware has grown from one leased Xerox Sigma 5 in 1971, to four purchased Xerox Sigma 9's by the end of 1977,<sup>3</sup> with a fifth Sigma 9 online at the end of 1979. From inception to the end of 1978, OCLC has grown tremendously and now serves over 1,800 institutions through twenty regional networks.

In summarizing OCLC's twelve years of growth, Thompson notes that OCLC has not accomplished the original goal

... of developing a fully integrated, online system ... [but has been] instead devoting its energies to nationwide expansion. It functions rather, as a union catalog, as a data base for catalog records, and as a sort of word-processor for catalog cards. ... OCLC has acquired an all-inclusive data base and a large clientele and has paid the price in excessive demands on its central computer facility and development staffs.<sup>4</sup>

On 6 November 1979, there were approximately 5,601,420 records in the OCLC data base. Of these, about 29.8% were LC MARC records.<sup>5</sup>

The Research Libraries Information Network (RLIN) began its career at Stanford University in 1969 as *BALLOTS*—Bibliographic Automation of Large Library Operations using a Time-sharing System. The 1969 *BALLOTS* system (funded by a grant from the U.S. Office of Education) was in operation for nine months, but proved too expensive and inefficient for continued use. Receiving grants from the Council on Library Resources and the National Endowment for the Humanities, Stanford was able to bring *BALLOTS II* online in November 1972. *BALLOTS'* objective was even then somewhat more ambitious than OCLC's. It sought not only to reduce the number of clerical tasks in processing, but also to extend the system in phases from technical services to other library functions.<sup>6</sup>

In its first years of growth, *BALLOTS* served only Stanford University through its campus computer center. By bringing both the cataloging and acquisitions functions online, Stanford was able to effect a savings in personnel of about 5.6% by 1974.<sup>7</sup> By 1975, seven California public libraries had joined the system as it became available off-campus through *TYMSHARE*. The next year, *BALLOTS* converted to a new generation computer (the IBM 370/168), implemented full MARC cataloging with ISBD punctuation, and was able to provide online service to users beyond Stanford through "Multilibrary Shared Cataloging Module."

RLIN's growth has been much less spectacular than OCLC. By the beginning of 1979, there were 130 participants in the system. However, this does not provide a true picture of RLIN's accomplishments over the last six years.

The change of name from *BALLOTS* to RLIN encapsulates much of the recent history of the system. RLIN, perhaps never intended to serve all libraries, has in the last two years increasingly sought out the large research libraries. A recent convert to RLIN, Pennsylvania's Richard De Gennaro, views the trend evolving:

Because of their size, complexity, and special mission, these libraries [large research libraries] feel that they need the more sophisticated capabilities of the RLIN system, including a high quality data base with authority control, the ability to build and maintain online catalogs of their own holdings with copy-specific and other local information, and powerful search capabilities.<sup>8</sup>

The last year has seen two significant events: first the merger of *BALLOTS* with the Research Libraries Group, forming RLIN as the system for the RLG, and second, RLIN's agreement with the Washington Library Network to exchange data bases and cooperate in networking. RLIN's recent rise has brought it into direct competition with OCLC, thus, perhaps, ending "networking's era of benevolent monopoly."<sup>9</sup>

On 6 November 1979, the RLIN data base contained 1,160,752 records, of which 81.9% were LC MARC.

While not yet as financially powerful as OCLC, RLIN is meeting a more inclusive set of library objectives and thus gaining increasing nationwide support and attention. However, much of the RLIN system remains in the planning stage and has not been implemented beyond Stanford University.

## File Structures and Search Capabilities

In examining the file structures and search capabilities of the systems, most of the readily apparent differences between the two come to light.

OCLC has organized its bibliographic records into a single file structure with pointers embedded in the record to bring searches on subfields back to the main record. Thus, should a search be made by author, the keys if matched with those in the author index will cause the entire record to be retrieved because pointers in the author index lead directly to the appropriate record or records. In order to provide such a system with the speed and efficiency necessary to the computer environment, a method of hash coding is employed which optimizes the use of storage space and retrieval time. However, this method requires that a limit be set on the number of records a search key may retrieve. In the present OCLC algorithm, this limit is 256 entries.

With a data base of well over five million records, the provenance and subject coverage are quite varied. The ratio of LC MARC records to contributed copy has been steadily declining for years. At present, LC records account for about 29.8% of the data base; those from all academic libraries, 58.1%; and from others (including special and public libraries), 12.1%. Of the records in the system, the LC share ranges from 31.7% for serials down to .03% for maps. As one would expect, the distribution of the records by imprint date heavily favors the most recent publications (37.9% for 1971-1980 imprints), but about 34% of the records cover materials with imprint dates from 1450 through 1960.

Access to the OCLC system is provided through a set of search keys for author, corporate author, title, author/title, LC card number, ISBN, ISSN, CODEN, and OCLC identification number. Reflecting the file structure of the system, most of these keys are formed by combining the first letter or letters of the search element with those following it. Thus, either the exact form of the main entry or title is necessary for searching OCLC. Naturally, the numeric keys provide the fastest results; but the other keys are more exhaustive.

The tremendous growth of the system has, however, been achieved at a price: there are relatively severe limitations to the search capabilities of the system. While the personal author search has been available during all system hours for some months now, such searches often result in very slow response time. The corporate author search is still limited to non-peak hours. Directly affecting these keys as well as title and author/title searches is the limitation of 256 on the number of entries the system can access. Thus, while a request for the words "American Library Association," appearing in any combination with any additional words, as author produces over 6,000 entries in the RLIN system,<sup>10</sup> the more restricted request on OCLC leads to a dead end.

The limitations of the 256 algorithm are proving increasingly severe, especially since the system continues to grow rapidly. By mid-1979, approximately 1200 search combinations (492 for title, 387 for author/title, and 330 for author) were unusable because they retrieved over 256 entries. Although there is no reliable way to calculate the number of records involved, 307,200 (1200 multiplied by 256) would seem conservative. Even though many of the records might be retrieved through some other search key, obviously many combinations yield sets far in excess of 256.

In general, OCLC appears to offer five advantages. Even with its limitations, the size of the data base greatly increases the chance that some record will be found. Thus, most libraries can catalog 80-90% of their materials through the system.<sup>11</sup> Second, because a large proportion of older materials is in the data base, and because OCLC offers reduced rates for it, retrospective conversion is greatly facilitated by the system. The third advantage is perhaps more political than technical: because many large academic libraries are state supported, part of their mission is to provide materials and other services to the smaller state institutions. The availability of the record with its holdings symbols for these smaller libraries means that the large academic library can provide greater support than was previously available.<sup>12</sup> Fourth, OCLC can assist reference services by providing access to materials not normally cataloged locally (such as Federal documents), materials for which cards have not yet been filed in the catalog, and by verifying materials not in the collection.<sup>13</sup> Finally, because the system is structured on a regional basis, the local networks can provide relatively swift maintenance, training and other support functions.

However, besides the limitations of the 256 algorithm, OCLC possesses a number of other disadvantages. While system downtime averages no more than 4-5% per week, local telecommunications downtime may often increase this figure significantly. In general, the system exercises very limited quality control. This is quite apparent in the number of duplicate records in OCLC. Not only are participants required to use the record first input (often of poor quality), but the situation may be further exacerbated by libraries attempting to avoid usage fees by inputting their own records when the records already exist in the system.<sup>14</sup> OCLC's small Bibliographic Record Management Section, Library Systems Division, is charged with eliminating such duplication, but this is third in its priorities, behind correcting records and filling in frequencies for serials records. Most duplicate records cannot be simply removed from the files, since OCLC is unable to transfer holdings symbols to other records. However, the system is programmed to allow LC MARC records to "bump" previously entered cataloging for the same item.

The fact that the individual cataloging record is not online both precludes the use of the system as an online catalog and significantly adds to the burden of updating and correcting a record. Since there is limited authority control available through OCLC, records must be manually integrated into the library's catalog. If current investigations result in an OCLC decision to place restrictions on the use of an institution's archival tapes, this too must be seen as a disadvantage.

The file structures and search capabilities of the RLIN system reflect both its later arrival on the online scene and its more comprehensive goals. The RLIN system, even in its earliest phases, was planned as an integrated library system going beyond technical services functions to encompass a wider range of library objectives.

The RLIN system uses four basic files from which a number of indexes are constructed allowing a wide variety of search techniques. The files are interdependent and may be sequenced in any order in either search or input mode. The Catalog Data File (CDF) contains the records input by the participants and may be searched specifically by the institution inputting the record. Thus, if a



library wishes to search only Stanford's records, a subset of the file is brought online. Of course, this also means that each participating institution may have its own cataloging online. The MARC File (MRF) contains only LC records from January 1972 to the present.<sup>15</sup> The Reference File (REF) contains the cross references in use at Stanford. While this provides some authority control, searching the system for an older author demonstrated that only those cross references for records in the CDF (from Stanford) have been included.<sup>16</sup> The fourth file, the In-Process File (IPF) is at present Stanford's automated acquisitions system. Here only those books on order at Stanford are recorded. The system-maintained sequence for searching is MRF, CDF, REF, and IPF. The operator may, however, sequence these files in any order. A record being catalogued from the IPF is automatically removed to the CDF when cards are ordered.

In all phases of online activity with RLIN, two modes are available to the participant: "full-face" and "line-by-line." The full face mode provides a CRT screen with data arranged much like a catalog card. The whole record can be displayed, corrected and input with a single transmission. A whole series of screens are available for this mode, which however, requires a dedicated high-speed communications line (probably something very similar to "hard wire") and a special RLIN terminal (the Zentec 9003). The line-by-line mode has its own set of screens which display the bibliographic elements in a vertical pattern with mnemonic tags denoting their function. Telecommunications here is through the slower and less expensive TYMNET (dial-up) to Stanford. Most RLIN participants use the system in line-by-line mode. There is nothing comparable to these two modes in the OCLC system.

RLIN's data base of over one million records contains a very high proportion of LC MARC records (81.9%), which primarily emphasizes its recent growth. Of the records entering the data base from Stanford (into the Catalog Data File), almost all bibliographic materials in the Roman alphabet are represented. The files are especially rich in materials in Western European and Slavic languages.<sup>17</sup> When in May 1977, BALLOTS had just over one hundred participants, these were broken down as follows: academic libraries, 46; public, 16; special 21; and governmental and others, 19.

The recent influx of large research libraries will certainly alter this balance and should, of course, change the composition of the data base. The RLIN system is scheduled for RLG use at the required levels by December 31, 1981.

RLIN's search facilities are by far its most impressive feature. The system is in many ways reminiscent of DIALOG-like systems in its wide range of capabilities and use of a fairly extensive command language. RLIN presently offers eight avenues of access: 1) personal name, full or truncated in any order; 2) title, full or partial, permuted or in original order; 3) corporate or conference names with truncation allowed; 4) LC card number; 5) RLIN identification number; 6) LC or DDC call number (in the CDF only); 7) LC subject headings (also for the CDF only); and 8) most recently, ISBN. The search capabilities of the system are further augmented by its use of Boolean operators allowing any of the access points to be used in combination with others, and the searcher's ability to modify the search with additional access elements after it has begun.

The advantages of the RLIN system appear at present to be more potential

and conceptual than actual. Certainly the philosophy of its builders, the creation of a system encompassing library functions well beyond just those of technical services, is an estimable goal. Frequently the quality of the bibliographic records in the data base is cited as an advantage, and probably quality will continue to remain high given RLG's recent decision. RLIN has shown greater initiative in bringing an authority file online than OCLC, even though the present system is based exclusively on Stanford's. The addition of New York Public Library's authority may be a benefit. However, since the end of January 1980, OCLC users have had access to about 180,000 of LC's most recent name-authority records. Generally, the system seems to suffer somewhat less than OCLC from downtime,<sup>18</sup> but this may change as more participants are brought online. Certainly the sophisticated search capabilities RLIN affords are a great advantage. So far the system has not encountered a stumbling block analogous to OCLC's 256 algorithm; and the ability to conduct a relatively complete search on corporate authors is a valuable addition.

Like OCLC, RLIN has its disadvantages, which may be subsumed under four categories. First, there are rather extensive limitations on the system's search capabilities. Neither the call number nor the subject heading search enter the MARC File. Thus, the number of records actually involved is quite small, and their usefulness limited: the call number search does not yield a reliable shelflist for the cataloger, and the subject search does not have the authority control implicit in LC MARC records. Secondly, the much smaller data base, with its gaps in LC cataloging, connotes a lower "hit rate" than OCLC, if the rate is calculated on the amount of original cataloging necessary. Certainly this is a disadvantage to a library embarking on a reclassification project, which would not receive the same reduction in usage fees offered by OCLC. A third point, the responsibilities of large academic libraries towards their smaller neighbors, warrants attention. Several RLG members, such as the University of Pennsylvania and Yale, are private institutions, perhaps not as responsive to such support functions. RLG's perception of a "special mission" coupled with the present competitive atmosphere between the two utilities, could presage a decline for cooperative librarianship and resource sharing. Finally, while the RLIN system is not yet complete, clearly, each library must closely consider the ramifications of centralized processing vis a vis distributed processing. Being larger with a highly centralized system need not be better.

## Costs and Managerial Ramifications

The world of library literature has, in recent years, seen a deluge of studies investigating the cost-benefits of online cataloging. Most of these examine OCLC; a few RLIN; and even fewer the two utilities together. Many studies are really comparisons of online cataloging and the previous manual systems, and almost all of them show a reduction of something somewhere by going online.

In studying cost benefits with OCLC, the literature breaks down into four groups. A few researchers, especially those studying a single institution, have noted actual reductions in the number of F.T.E. personnel needed in technical services,<sup>19</sup> while other studies, examining more than one library, have noted some decline, but not enough to support definitive conclusions.<sup>20</sup> Other

libraries have seen an increase in productivity and efficiency without any decline in staff since joining OCLC, and the same study points to a third conclusion, that OCLC fees have risen very slowly and that the system has generally kept the costs of technical services from rising at the same rate as inflation in recent years.<sup>21</sup> Finally, an Australian librarian, attempting to project costs for libraries in his country, arrived at the conclusion that: "... the more inefficient a library is the greater the benefits it is likely to derive from the system [OCLC] and vice versa."<sup>22</sup>

Fewer studies are available for RLIN. One study at Stanford noted fairly impressive staff reductions.<sup>23</sup> Another study, comparing costs for the two systems found an inverse relationship between previous library efficiency and future system savings much like the Australian study.<sup>24</sup>

The reason for discussing these studies is primarily to emphasize two theses. First, as the OCLC studies demonstrate, a library should not expect a windfall in staff reductions or necessarily in other savings; there are too many variables involved to posit a simple casual relationship. Second, since RLIN and OCLC are basically similar in what they provide, at least at this stage, one may extrapolate from the OCLC studies that similar effects would apply if RLIN were adopted.

Turning to actual costs of the two systems, the basic similarities seem to continue. In recent years RLIN has attempted to become more competitive in its pricing to the point that there is very little difference in fee structures between the two. One recent study found that RLIN averaged (or would average) \$.45 per title more than OCLC.<sup>25</sup>

This comparison breaks down, however, when the total costs to the library for each system are considered. Here the picture is much less clear. Neither utility precisely outlines all changes a library must bear to participate. This seems especially true of RLIN, with its rather expensive demands in the telecommunications sector. Each RLIN terminal requires a dedicated line, as compared with the one line for all OCLC terminals.<sup>26</sup> This situation is further exacerbated not only by the need to purchase new, relatively more expensive RLIN terminals, but also for the East Coast especially, by the need to have more terminals because the system is not up as long here as is OCLC.<sup>27</sup> Illinois' Hugh Atkinson, noting that his institution catalogs 11,000 titles monthly, declared "RLIN would cost the library \$50,000 a year more than OCLC does."<sup>28</sup> A recent study done at Cornell University came to similar conclusions: in the long run OCLC was "less expensive and more efficient," even though Cornell averaged an additional \$3.00 per title in costs to bring OCLC cataloging up to its standards.<sup>29</sup> From the foregoing, one may safely conclude that RLIN is indeed more expensive, but that actual differences are contingent upon several factors, including hours and workload of technical services, distance from California, and whether the library uses RLIN in full-face or line-by-line mode.

The ramifications for management in technical services appear to be quite similar, no matter which system is adopted at this stage. The clear division of function between cataloging and acquisitions was often blurred in many libraries by the introduction of OCLC. At its present stage of development RLIN should bring about a similar pattern. However, when RLIN brings its other

systems online, especially the In-Process File and full subject searching capabilities, these could quite possibly lead to much wider changes. The RLIN system was planned to integrate a broad spectrum of library operations. Thus, it seems likely that public service librarians will become more familiar with and active in some technical service functions, just as technical services personnel may perform support and even reference functions in assisting patrons to use public terminals. Therefore, if the RLIN design comes to fruition, the potentiality seems present for some rather sweeping changes in the duties and skills required of much of the library staff.

On another level, RLIN may promise a brighter future than OCLC. If De Gennaro is correct in his belief that the system can support the RLG in resource sharing programs for libraries now faced with the prospect of seeing their collections double every fifteen or twenty years, this may indeed be of great ultimate value.<sup>30</sup>

## Available Subsystems and Future Developments

Of the other facets of the OCLC system, two products are directly related to cataloging. System-generated catalog cards, arriving seven to ten days after the record is "produced" has been a great labor saving feature of the system. Not only has much of the burden been lifted from local photo-duplication facilities, but the fact that the cards come pre-sorted has also meant savings in catalog maintenance. OCLC archival tapes may prove even more significant for the local library. These may be ordered periodically and may be used to produce COM catalogs, book catalogs, or accessions lists for a single library or a group. The tapes, written in ASCII with unblocked variable length records may be converted into EBCDIC.

OCLC has one subsystem, the Serials Check-in System, which is relevant to cataloging. Still in the testing phase, the system provides three services: 1) automatic check-in to update holdings, predict arrival dates for the next issues; 2) a claiming system to identify unreceived issues and produce claims notices; and 3) a binding file to identify completed binding units and produce binding notices. The system is not yet fully operational.

Although the utility has yet to bring an acquisitions subsystem online, at least one library has been able to use the OCLC record reproduced on a local printer using large eight-part tear sheets, to facilitate the acquisition process.<sup>31</sup>

At present, OCLC has only one fully operational subsystem. The Interlibrary Loan Subsystem, available to all participants since April 1979, should greatly increase the speed and efficiency of library operations in this sector, if it does not prove too great a burden in terms of personnel, collection resources and funding for the larger libraries.

Ultimately OCLC is to consist of six subsystems: 1) the presently available cataloging unit; 2) serials control, still being tested; 3) the recently operational interlibrary loan system; 4) an acquisitions system; 5) circulation control; and 6) subject retrieval. Although it has brought an authority file online, authority control will, apparently, remain a problem for the system for some time. At a recent conference, an OCLC spokesman



"... saluted the regional networks and commended the democratic nature of doing without authority control. OCLC, she said, won't do anything about AACR-2 until 1981, but it will load the LC file authority file this December [1979]."<sup>32</sup>

RLIN differs very little in its support services currently available for cataloging. It too produces sets of pre-sorted catalog cards, sent out in three to four days. RLIN archival tapes, also written in ASCII, are also available for COM or book catalog production. However, if OCLC does place restrictions on its participants' use of the tapes, the RLIN system may prove more advantageous by default. RLIN does, however, provide one valuable service that OCLC does not. Should a library fail to find LC cataloging in the data base, it may enter a "Standing Order Search," which requires the system be searched monthly for eight months in an attempt to match the request with LC MARC records entering the data base. This service costs \$.30 per title per month, but it could prove valuable in reducing backlogs and labor involved in subsequent searching.

At present RLIN's other subsystems are limited to the In-Process file which generates purchase orders, vendor invoices, first and second claim notices and cancellation notices for the Stanford Acquisitions Department. Still:

[by] the 1980's, RLIN promises to make available network acquisitions and authority control. And it promises 'superior interloan service' since its members' requests, coordinated by the Bibcenter at Yale, will be given priority treatment over those of other libraries.<sup>33</sup>

RLIN also plans to implement an authority control file providing see and see-also references coupled with automatic error detection. It hopes to have this feature online during the first quarter of 1980.

The California utility also hopes to provide increased service in serials processing, support for non-book formats, and improved interfacing with the other utilities, including OCLC.<sup>34</sup> RLIN spokesmen, and the literature in general, are peculiarly silent about the extension of subject searching capabilities beyond the contributed cataloging file (CDF).

## **The Utilities and Standardization of the Bibliographic Record**

In examining the utilities' relationship to international cooperation, this section deals with two aspects, only roughly related to each other.

Understandably, perhaps, few Europeans have written much comparing the two systems. Two German librarians, writing in 1975, provide the little available information. A. H. Helal found that OCLC was achieving its major objectives in the areas of speed and efficiency and that it was "deservedly characterized ... as the most successful computerized, centralized data base in the states."<sup>35</sup> Neubauer, providing the only true comparison, found BALLOTS was in many ways the superior system. He was especially impressed by BALLOTS' search capabilities, beside which those of OCLC were described as

archaic. OCLC, lacking a unified editorship, would not provide the quality of online cataloging BALLOTS eventually will. While OCLC has met its limited mission, provision of cataloging support as swiftly and successfully as possible, it will encounter major difficulties as it attempts to broaden its objectives. BALLOTS, from the beginning conceived as an integrated system, "would most probably prove more qualified for use in non-English speaking nations because of its fundamental philosophy and its multifaceted capabilities."<sup>36</sup>

In the English-speaking world, the Australians have shown some interest in OCLC and its possible introduction into their country. On the one hand, the system provides access to much that is not in the Australian MARC system. On the other hand, there appears to be relatively slight cost-benefit in adopting OCLC.<sup>37</sup> Most recently the Australian National Library has acquired software from the Washington Library Network.

The second issue, international standardization of cataloging is, at this stage, not directly relevant to the utilities as such, although recent LC decisions imply that they will have a greater voice in future format changes.<sup>38</sup> From the Paris Conference in 1961 through the Copenhagen Conference of 1969, most IFLA attention was centered on standardizing the cataloging codes. In some ways, AACR-2 is a product of these efforts. Since 1969, increasing international effort has gone towards producing a standard machine-readable format for the bibliographic record. By the mid-1970's the situation in Europe was fairly confused: while France, Sweden, Norway, and the Netherlands were able to adopt most of the MARC II format, each national library used the tags and subfield designators to denote different elements. The West German format (MAB) bears very little resemblance to MARC II.<sup>39</sup>

Some idea of the differences in complexity may be seen in the fact that in the U.S. MARC format, the title field is broken into three subfields, while in the INTERMARC format [then under consideration for international bibliographic data exchange] it is subdivided into twelve.<sup>40</sup>

Whereas most of the conclusions relevant to file structures and search capabilities are included with that section, some closing, hopefully more general remarks might be made at this juncture.

Viewed solely in terms of cataloging functions, OCLC seems the better system: in its present configuration it most nearly serves as a cataloging support system. Many of RLIN's features, such as its sophisticated search capabilities have only limited value to the cataloger working with book-in-hand.

Generally, OCLC appears the better system when comparing the *present* performances and capabilities of the two. It contains a wider variety of records in a much larger data base. Certainly the 256 algorithm has proven unfortunate: the lack of quality controls has allowed much duplication and many records of suspect quality to enter the data base. Still, RLIN's smaller, and apparently more exclusive data base would make it a second choice even though the Standing Order Search and the ability to retrieve one's own cataloging are desirable attributes. Also, it seems apparent that OCLC will not stand still: perhaps the present competition will foster new programs at a quicker pace.

RLIN, on the other hand, promises a much brighter future. The integrated concept is certainly an attractive one, and in many ways reflects a somewhat pervasive holistic frame of mind common in academic circles. However, it seems that the real question here is the place of centralized processing in future automation. It now seems probable that some tasks are better accomplished locally, and that the cause of efficiency might be better served by operating some systems locally, such as acquisitions and circulation, rather than through a central computer in Ohio or California. In some ways, RLIN may be proposing a panacea to the library's processing problems. It appears to be somewhat analogous to "turn-key" computer systems, ready to turn on, but unable to confront and handle the myriad of local exceptions, standards, and policies which form such a critical part of the library's core.

The rise of the RLG and its use of RLIN may in fact form the basis for a further division in the library world, rather than leading the way to national bibliographic control. There does seem to be a certain elitism in some RLG pronouncements, and one does wonder what "special mission" RLG members have which has been denied other large academic libraries.

Perhaps the happiest and most utopian conclusion to the present situation would be the rise of national or regional vendors who could handle at least these two utilities so that a single library could access the bibliographic record independent of where it was input. After all, such knowledge, if not free, should at least flow freely, shouldn't it?

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#### NOTES

1. While the author is primarily concerned with non-machine readable copy, Dowell's book is perhaps the best work on this complex issue. See: Arlene Taylor Dowell, *Cataloging with Copy: A Decision-maker's Handbook* (Littleton, Colo.: Libraries Unlimited, 1976).
2. James Thompson, "The 'New' Catalogs and the Unfinished Revolution," *American Libraries* 10 (June 1979): 358.
3. Jamie J. Levine and Timothy Logan, *Online Resource Sharing: A Comparison of BALLOTS and OCLC, A Guide for Library Administrators* (San Jose, Calif.: California Library Authority for Systems and Services, 1977), p. 85. For a slightly revised, but more recent treatment see: Mary Ellen Jacobs, Richard Woods, and Judith Yarborough, *Online Resource Sharing II: A Comparison of: OCLC, Incorporated, Research Libraries Information Network, and Washington Library Network*, ed. Susan K. Martin (San Jose, Calif.: California Authority for Systems and Services, 1979).
4. Thompson, "The 'New' Catalogs," pp. 358-359.
5. The total number of records was obtained by taking the first identification number for the day for a new record and subtracting 1% for deleted records as per OCLC's recommendation. *OCLC Newsletter*, No. 122, April 5, 1979, p. 5. This figure is somewhat misleading in that not all of the records are accessible, see *infra*, p. 6.
6. "Stanford University's BALLOTS System: Project BALLOTS and the Stanford University Libraries," *Journal of Library Automation* 8 (March 1975): 31-32.
7. *Ibid.*, pp. 41-42.
8. Richard De Gennaro, "Research Libraries Enter the Information Age," *Library Journal* 104 (November 15, 1979): 2409.
9. Richard De Gennaro, "From Monopoly to Competition: The Changing Library Network Scene," *Library Journal* 104 (June 1, 1979): 1216.
10. Interview with Benjamin F. Speller, Jr., Professor of Library Science, North Carolina Central University, Durham, N.C., 6 November 1979. Speller demonstrated many of RLIN's functions by connecting (dial-up) to RLIN and going through several phases of searching and inputting. The figures given are those presented by the system.

11. Actually, several studies place this figure at well over 90%, but the more conservative figure seems more appropriate for a library dealing with relatively esoteroi materials. Both OCLC and RLIN claim "hit rates" of 80-90% but this is misleading in that these rates actually reflect the ratio of new records input vis a vis those already in the system from which cards are "produced." Interview with Joe A. Hewitt, Associate University Librarian for Technical Services, Wilson Library, University of North Carolina at Chapel Hill, Chapel Hill, N.C., 8 November 1979.
12. This encapsulates part of Illinois' Hugh Atkinson's reasons for remaining with OCLC. "OCLC & RLIN Backers Cross Swords at Mid Atlantic," *Library Journal* 104 (November 15, 1979): 2390.
13. Richard W. Blood, "Impact of OCLC on Reference Service," *Journal of Academic Librarianship* 3 (May 1977): 68-75.
14. Susan K. Martin, "Library Networks: Automation and Organization," *Summary of Proceedings, Thirty-First Annual Conference of the American Theological Library Association*, Vancouver School of Theology, June 20-24, 1977 (Philadelphia: American Theological Library Association, 1978), p. 99.
15. Allen B. Veaner, "BALLOTS—The View from Technical Services," *Library Resources and Technical Services* 21 (Spring 1977): 128. The author notes that at the time he wrote, the BALLOTS MRF contained a gap (May-August 1972). No evidence appeared in the literature surveyed that this situation has been rectified. Also, from 1972 to February 1975, certain classes of LC records were excluded, while others were loaded without fixed fields. Apparently these records were loaded or updated late in 1977 or early 1978. Logan and Levine, *Online Resource Sharing*, p. 22.
16. Speller interview. The test used was rather simple and, of course, subject to error. A relatively famous German author, Muller von der Bruck, was chosen. Searching on the whole name or any part of it failed to retrieve any records, and also failed to retrieve the obvious (and established by LC) cross references.
17. Veaner, "BALLOTS," p. 128.
18. System downtime averages 3.8% per week. Jacobs et al., *Online Resource Sharing II*, p. 15. The authors also note that RLIN's response time is slightly better than OCLC's.
19. Joseph Z. Nitecki, *OCLC in Retrospect: A Review of the Impact of the OCLC System on the Administration of a Large University Technical Services Operation*, University of Illinois Graduate School of Library Science, Occasional Papers, No. 123 (Urbana: University of Illinois Press, 1976), p. 11. Nitecki notes the need for fewer, but more advanced catalogers. G. Stecher, "Shared Cataloguing: An Exercise in Costing OCLC," *Australian Academic and Research Libraries* 7 (March 1976): 1-11. While not actually a study of OCLC in operation, Stecher does see some personnel reductions as likely in certain technical services functions.
20. "The Impact of OCLC on Departments Cataloging—A Study," *Network* 2 (January 1975): 15-16. Of the eleven Ohio libraries studied four and a half professional positions were eliminated during the three years studied. A simple Z-test shows this is not statistically significant. Joe A. Hewitt, "The Impact of OCLC: The Good and the Bad, as Recorded by Researcher Joe A. Hewitt in an Epic Journey to Every Charter Member Library of the Online System," *American Libraries* 7 (May 1976): 273-274. Elizabeth W. Matthews, "Effect of OCLC on Workflow in Law Libraries," *Law Library Journal* 71 (November 1978): 663.
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22. Stecher, "Shared Cataloguing," p. 10.
23. "Stanford University's BALLOTS," pp. 41-43.
24. Anton R. Pierce and Joe K. Taylor, "A Model for Cost Comparison of Automated Cataloging Systems," *Journal of Library Automation* 11 (March 1978): 12.
25. *Ibid.*, pp. 18-22.
26. Hewitt interview.
27. Rodger S. Harris, Head of Cataloging, Wilson Library, University of North Carolina at Chapel Hill, Memorandum of Costs of Converting to the RLIN System, 29 October 1979.
28. "OCLC & RLIN Backers," p. 2390.
29. "RLIN Wins More Grant Aid; Adds New Members," *Library Journal* 104 (August 1979): 1505.
30. Richard De Gennaro, "Research Libraries," pp. 2406-2409. Hewitt, however, in "Impact of



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31. Doris R. Brown and Kathryn De-Graff, "From Purchase Order to Processing Slip on OCLC," *Library Journal* 104 (October 15, 1979): 2173-2174.
32. "OCLC & RLIN Backers," p. 2389.
33. Ibid.
34. Levine and Logan, *Online Resource Sharing*, p. 86.
35. A. H. Helal, "Bibliotheksautomatisierung in Ohio College Library Center & Northwestern University Library," *Zeitschrift für Bibliothekswesen und Bibliographie* 22 (Mai/Juni 1975): 264.
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39. Mogens Weitemeyer, "Den internationale situation vedrørende ebd-formater," *Bogens Verden* 2 (1974): 42.
40. Lucia J. Rather, "Exchange of Bibliographic Information in Machine-Readable Format," *Library Trends* 25 (January 1977): 635.

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