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Author

State of California. Audits Division.

Publication Date

1972-02-01

California. Audits Division.

THE MANAGEMENT AND OPERATIONS

OF THE

UNIVERSITY OF CALIFORNIA.

Volume I: THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA.

Part I: The Development of the Library Collection, 1972.

LIBRARY
UNIVERSITY OF CALIFORNIA
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State of California
Department of Finance
Audits Division
February 1972

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

Part I: The Development of the Library Collection

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PREFACE

This is the first in a series of reports on the operations and management of the University of California. The study was undertaken to assist both the President of the University and the State Director of Finance to plan the University's future growth as systematically as possible.

The first volume in this series is concerned with the University's libraries. Part I deals with the development of library collections, and Part II covers library operations. The major findings, conclusions, and recommendations are summarized before each part for readers who are not interested in the details of the study. A chapter describing the methodology used in our analysis is appended, however, for any readers whose interest takes them that far.

While the report was written primarily for high-level University and State administrators, we have attempted to minimize the use of jargon wherever possible so that it could also be read by most laymen.

One accumulates many debts in the course of conducting a study of this magnitude, and we gladly take this opportunity to acknowledge them. Our primary debt is to all the University officials who were so generous with their time and so helpful to us during our field work. Unfortunately, space does not permit us to thank each one individually, but a few should be mentioned. Mostly, we wish to thank the 56 librarians and 31 other officials who permitted us to interview them. Particular thanks is due to Robert Vosper and the UCLA library staff, since we spent more time there than on any other campus. Johanna Tallman was especially helpful in explaining some of the special problems libraries face such as price discrimination and in explaining the problems associated with outside users.

J. Richard Blanchard at Davis was most helpful in acquainting us with some of the literature in the field of library science. Vernon Lust was also extremely helpful by making his extensive records available to us.

Melvin Voigt's explanation of the special uses and requirements of a research library was extremely helpful as was Fred Bellamy's discussion of the problem of automation.

We also wish to thank Vice President Taylor and Assistant Vice President Furtado and their staffs for familiarizing us with library problems from the universitywide perspective.

John Stanford and his staff were kind enough to review an early draft of the report. We benefitted from their comments and we appreciate their efforts. The comments forwarded to us from the Office of the Librarian at UCLA and from Eldred Smith and J. A. Rosenthal at Berkeley were also most helpful.

The aid, assistance, and suggestions received from these and other sources has been of the utmost value. If they were poorly acted upon, the responsibility is ours alone.

BURTON R. COHEN
RICHARD T. SODERBERG

Sacramento, California

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REPORT ON THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

STUDY SCOPE AND METHODOLOGY

This study, which is part of an overall review of University operations, attempts to analyze the structure and functions of the University of California library system. We reviewed the management, procedures, and policies of the University libraries by examining financial records, policy documents, and reports as well as by interviewing universitywide administrators, librarians and campus administrators on all nine campuses. We concentrated on evaluating the general effectiveness of the most important library programs, identifying opportunities for improved services and/or cost reduction, and developing alternative courses of action for the overall benefit of the people of California.

The areas explored in the report are: (1) collection development, (2) technical processing, (3) prices, (4) hours open, (5) outside users, and (6) personnel. Unfortunately, we were not able to examine the reference or circulation functions in as much depth as we would have liked, because of the time constraints imposed upon the study.

In the course of our field work, which lasted approximately five months, we interviewed a total of 87 University officials, including 56 librarians, 24 campus officials, and 7 universitywide officials. We also examined countless records, reports, and other documents at all levels. The analysis and writing phase of the study lasted about four months.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

EXECUTIVE SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

PART I: THE DEVELOPMENT OF THE LIBRARY COLLECTION

Introduction

The purpose of this report section is to provide users with a short summary of major findings, conclusions and recommendations, together with quick reference to applicable portions of the study. It was also written with the thought that it will prove useful, if separately reproduced, as a synopsis for persons who are interested in the study but do not need to know all of the details of the considerations and deliberations contained in the full report.

Major Findings and Conclusions

- . Finding: The total UC library collection was expanded from 4.8 million volumes in 1961 to 10.6 million in 1970. Page 9.

- . Finding: Even the smallest three general campus libraries had 0.31 million, 0.39 million, and 0.58 million volumes respectively on June 30, 1970, and the two largest had 3.8 and 2.9 million volumes. Page 9.

- . Finding: The University plans to expand its collection again, if funds permit, to 17.5 million volumes by 1978. Page 12.

- . Finding: Library expenditures in 1970 were \$28 million per year; the new plan, if financed, would add over \$2.7 million per year, excluding inflation, to this base. Pages 13-14.

- . Conclusion: The more than doubling of the collection between 1961 and 1970 did not satisfy the University's perceived library needs or desires. Hence, University goals to add another 8 million volumes by 1978 were set. Pages 12-14.

- . Finding: Under these goals, the library expenditures would reach an estimated \$50 million annually, excluding inflation, by 1978. Page 14.

- . Conclusion: It appears doubtful that these goals can be financed; hence, other alternatives must be sought. Page 16.

- . Finding: The University's budget criterion for libraries other than UCB and UCLA calls for percentage increases in the number of library volumes based upon the increase in the number of full-time students. Page 17.

- . Conclusion: This criterion would be valid if the need for additional volumes were based upon increased student enrollment. Page 17.

- . Finding: However, only a small proportion of a university library is for use in teaching or preparing to teach students. Professional opinions estimate the "core collection" at from 50,000 to 125,000 volumes. Page 19.

- . Finding: Even the smallest UC general library has three times the number of volumes required by the high estimate. Page 20.

- . Conclusion: The bulk of the collection, then,--the "research collection"--is for faculty and doctoral candidate use in research, and it is for this purpose that the bulk of the new expansion is planned. Page 20.

- . Finding: This conclusion was verified by statistical analysis of past library expenditures on each campus, which can be explained as representing a base cost of \$500,000, plus \$37 per student, plus \$3,123 per faculty member annually. Pages 24-27.

- . Finding: While core collection items are frequently used, much of the research collection is used very infrequently. At Berkeley, only 16 percent of the Loan Stack Collection, which represents about one-half the total collection, was circulated at least once in an 18-month period. Some professional estimates are that 40-75 percent of the collection of a large research library satisfies only 1 percent of the use, and 99 percent of the use is concentrated in 25-60 percent of the collection. Pages 21-22.

- . Finding: Many experts agree that interdependence between libraries is feasible and is essential to achieve economies through avoidance of research collection duplications. Pages 29-30.

- . Conclusion: The University, however, instead of vigorously pursuing interdependence and cooperation in collection development, has been developing independent research library capabilities on each of its general campuses. This is the reason for the large expansion planned in the 1970's. Pages 32-35.

- . Finding: Duplications which are very costly occur as a result; for example, seven bound sets of The British Parliamentary Papers were purchased at cost range of between \$45,000 and \$60,000 per set, a total investment of over \$350,000 for this single work. Page 34.

- . Conclusion: While the University is engaged in many worthwhile activities to improve interlibrary cooperation, these appear to suffer from being given low priority. They should receive additional funds from monies now being spent for acquisition. Page 36.

- . Finding: Meanwhile, interdependence and cooperation between UC campus libraries has decreased, as measured by interlibrary loans, instead of increased, as one would expect because of the greater number of potential users. Pages 37-38.

- . Conclusion: The most feasible explanations are that the individual campus library research facilities have grown to the extent that users need not depend upon other UC libraries to the same degree as formerly, and that users are dissatisfied with the level of service given on interlibrary loans. Page 38

- . Finding: The aforementioned sets of The British Parliamentary Papers could have been purchased (as one campus did) in microform at a cost of \$9,000 per set as compared to the average price of \$52,500 paid per bound volume set, although admittedly at some loss of convenience to users.
- . Conclusion: Other substantial opportunities for savings through increased use of microform materials for research collection needs exist, but these will require better indexing, cross-referencing, and cataloging by the University and possibly the acquisition of additional viewing and reproducing equipment. Pages 51-54.
- . Overall Conclusion: Substantial opportunities exist for increased interdependence, cooperation, and coordination. These would: (1) provide better services to faculty and students than they now have, and (2) avoid the projected cost increases of the UC's current library expansion program. Pages 45-47 and 49-51.

Recommendations

1. We recommend:

- . That the University reexamine and restate its library acquisition goals and policies, in the light of (a) their probable financial inability to meet present goals, and (b) the opportunities for providing satisfactory access to adequate research collections at less cost through increased interlibrary coordination (with consequent decreases in the number of additional volumes needed systemwide).

- . That the University, if it has not already done so, establish weighted library collection objectives which, whatever the available funding level, would allow the systematic allocation of funds by first funding the highest library acquisition priorities of the overall University.

2. We recommend:

- . That, in future library development, the University give full consideration to the opportunities for economies that can be achieved by centralizing holdings, to avoid the duplication of little-used research material on each campus.
- . That alternatives for achieving these economies through integration be generated and evaluated thoroughly by the University.

3. We recommend:

- . That the University explore in depth the probable consequences on research library needs of the present uncertainties concerning (a) the need for additional Ph.D. 's; (b) the levels of Federal and other financing of research, and (c) the type of research to be supported.
- . That relatively modest library acquisition goals be established until this study has been completed.
- . That budgetary restraints be used to insure compliance.

- . That the University recognize that a large proportion of its current and future needs for expanded collections are for the use of faculty and doctoral candidates in doing research; and
 - . That library needs and costs receive full consideration in decisions to augment faculty size or increase the scope of the doctoral program.
4. We recommend:
- . That consideration be given to the current distribution of graduate programs among the several campuses, to determine if a satisfactory graduate program could be offered at less cost by a redistribution of the programs between the campuses.
5. We recommend:
- . That increasing interdependence of UC libraries to avoid unnecessary duplication become a high priority University goal.
 - . That more funds be allocated from existing library funds and a higher priority be given to present efforts to improve interlibrary cooperation and coordination within the UC system, especially in the area of collection development.
 - . That particular attention be paid to efforts which will minimize the need for research collection duplications, through the establishment of satisfactory interlibrary loan and photocopy services.
 - . That present activities on some campuses to minimize intra-campus duplications be continued, increased, and expanded to other campuses.

- . That these activities be financed from acquisition funds, as a trade-off measure, with the recognition that their successful completion and implementation will maximize the effectiveness of future acquisitions and expenditures.

6. We recommend:

- . That materials in microform be used to a greater extent than at present.
- . That these be used whenever the costs of so doing are less than the costs of printed material and when the material can be used satisfactorily in microform (even if not as conveniently as in full size form).
- . That the University take whatever action it needs to allow satisfactory retrieval of microform data.
- . That additional viewing and reproducing equipment be purchased, if, after study, this proves essential to microform use, again as a trade-off with acquisition funds.

7. We recommend:

- . That these recommendations receive a high priority for additional study, evaluation and implementation.
- . That overall responsibility for their evaluation and implementation be assigned to a high level University official, working with a steering committee if so desired.

- . That interdisciplinary task groups be established and given the necessary time to perform the recommended studies and to implement the accepted recommendation.
- . That due dates and schedules be fixed for these efforts.
- . That these task groups, in addition to University academic and library personnel, also be comprised of people from outside the University system, such as systems analysts, management consultants and representatives of the State Director of Finance.

Summary

In the course of this study, we identified major opportunities for providing University scholars with access to more research materials than at present, and at substantially lower costs than envisioned by the University's library collection expansion plan. Admittedly, these opportunities would cause more inconvenience to library users in conducting research than would result from the University's expansion plan. But it is doubtful, in our opinion, that the University would be able to finance the latter.

The key is interdependence among the University system's libraries in the collection and utilization of research materials. The basic core collection for the education of students below the doctoral level is already well provided, and the costs of keeping that portion of the collection current are nominal.

In the words of Mr. John Stanford, University Acting Vice President, Business and Finance, "The idea of interlibrary cooperation is certainly valid. So is the concept of coordinated planning in order to utilize our multi-campus library structure most effectively."¹/ Mr. Stanford states, and we recognize, that the problem is complex with many issues and alternatives. He suggests that our report should raise issues and urge that these issues receive adequate attention.

It is our hope that the findings, conclusions, and recommendations summarized above have recognized the complexities and raised the issues, and that the needed attention will be forthcoming.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

STATE DEPARTMENT OF FINANCE

AUDITS DIVISION

INTRODUCTION

A large, diversified and comprehensive library collection is among the most essential features of a great university. The excellence of a university's education and research programs is in large measure dependent upon the excellence of its library resources.

A great library serves other essential purposes. The comprehensiveness and quality of a university's library collection and services are, in the words of J. Rosenthal, Associate University Librarian, University of California, Berkeley:

. . . a factor in attracting students (especially at the graduate level) and in drawing and retaining faculty. Library collections are of no mean significance in stimulating research and in serving as a breeding ground for significant research contributions. Furthermore, the strength of libraries act as a drawing power for gifts and endowments which help to build the collections apart from regularized institutional support.2/

University libraries support the teaching and research activities of the academic communities in which they exist and the needs of scholars, scientists and students of other academic centers. Additionally, they are a public resource of great importance because of the services they provide to business, industry and government and hence, by extension, to the entire community.

By any standard, the libraries of the University of California comprise a great system and a major public resource of both California and the United States. Several of the individual campus libraries are of world renown; some of the world's foremost specialized research collections exist on UC campuses. The total collection, on June 30, 1970, was estimated at 10,653,000 volumes; Harvard, in comparison, had about 8,000,000 volumes at that time. Berkeley and Los Angeles had, respectively, 3,845,000 and 2,917,000 volumes. And the University's general recognition as being among the very top in the world--in excellence of research, faculty, graduate and undergraduate programs, professional schools and public service--attests in great measure to the excellence of its library collection. This collection undoubtedly must be maintained and enhanced.

Yet, there are a number of issues beyond the scope of this study which complicate the questions of how much should be spent for library collections, for what kinds of materials, to be located where. For example, the future level of Federal and other support for research is in doubt,^{3/} as are the types of research to be supported. Also, many eminent scholars and educators believe that we are producing an overabundance of Ph.D.'s. Chancellor Bowker of the University of California at Berkeley, in discussing the possibilities of establishing doctoral programs at the state colleges, was recently quoted by the A.P. as saying that:

. . . the need for more doctoral programs simply does not exist.
. . . What has happened in America is that with an oversupply of highly educated people, educational credentials, rather than ability to perform a job, have become the major criteria for job entry.^{4/}

And Earl F. Cheit^{5/} of UC Berkeley, recently completed a study for the Carnegie Commission on Higher Education in funding. In October, 1971, he spoke to the members of UC Berkeley's 1971 Executive Program about "the 20 tough, lean years" which, in his opinion, higher education has begun to face in the United States. Then, drawing conclusions from the work of Allan Cartter, Chancellor of New York University, he gave estimates of the growing number of Ph.D.'s to be graduated in the 70's and 80's, and expressed concern for the ever accelerating number of "over-educated, under-employed people in the labor market." He expects these trends to continue into the 1990's.

Informed opinions such as these raise questions which are beyond our scope about the role and policies of the University and of its several campuses. By implication, they challenge the size and focus of the University's program on the basis of both need and resource availability. These issues suggest that the University would wish to use caution in the acquisition of library materials, during this period of uncertainty about future needs, goals, and financing, and consider alternatives carefully which may lead to reduced but optional levels of library expenditures.

The goal of maintaining and enhancing the University's library collection and services is complicated by a number of other factors. Among the more important are the following:

- . Publication Explosion--It is estimated that the total volume of printed materials has doubled within the last ten years. If the libraries are to continue to keep current in those fields in which they maintain a collection, it would appear that careful selection and other means of achieving full use from volumes purchased would be in order, if costs are not to skyrocket beyond the University's reach.

- . High Inflationary Rate in the Price of Publications--Overall, the cost of monographs and serials rose 18 percent during 1970-71. In some areas such as science periodicals, inflation was as high as 26 percent. This large rise in prices will have a significant impact on overall library costs or, alternatively, on collection size.
- . New Campuses with Comparatively Modest Libraries--The University has opened three new campuses during the last decade and greatly expanded the mission of three others, creating the need for access to larger collections on six campuses.
- . New Graduate Programs at a Number of Campuses--This again has created a need for additional access to specialized collections on the affected campuses.
- . Library Needs Compete with Other Overall University Needs--Overall University costs have been rising rapidly due to a number of factors including student unrest, student expectations about teaching methods, the need for more student aid due to the public aim of reaching the disadvantaged, and the labor-intensive nature of a University. With the growth of these other needs, library costs must be put in proper perspective and priority among the other University programs.
- . Overall University Needs Compete with Other Public Priorities--Not only have overall University costs increased, so have those of most other Government funded programs. It seems unlikely that the public would be willing to raise its level of support for all Government programs to any substantial degree. Thus, total University needs are in direct competition with other public programs for short dollar resources.

It was with all of these conditions in mind that this study was undertaken. The task was approached with some trepidation because we were well aware, as the University has pointed out to us, that:

. . . Each library is a reflection of the role of the campus within the University, the several campuses are not all peas in a pod . . . One cannot analyze librarians and librarians in isolation from the dynamics of the academic community and planning in which the library functions.6/

Obviously, a full understanding and analysis of the academic implications of changes in library structure and policies are beyond our scope and our time constraints. Indeed, we have attempted to provide the President of the University and the State Director of Finance with a different perspective; that of information, observations, conclusions, analysis and suggestions from the viewpoint of persons who are not professional educators or librarians.

It has been our intention to make our report as one university librarian found our preliminary draft to be ". . . generally reasonable, although debatable. In fact, many of the issues are urgently debated and pursued in academic and professional library circles in California and elsewhere."7/

If this report is of assistance in stimulating debate and discussion, in raising issues, in adding useful new viewpoints and alternatives, and particularly in speeding problem resolution, then our objectives will have been accomplished.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

A BRIEF HISTORY OF THE UNIVERSITY OF CALIFORNIA LIBRARIES

The oldest and most comprehensive library in the University of California system is located on the Berkeley campus. The library was first organized in 1869, even before the present campus there had been built. At that time the library was open for only one hour each day and users were not allowed to check out books. Although the library is more than one-hundred years old, most of its growth has been a quite recent phenomenon. In 1869 the library possessed 1,200 volumes. It took the library 86 years to acquire its first 2 million volumes, but it obtained another 2 million volumes in only the last 16 years. The Berkeley library has 41 branches.

The second largest library in the UC system is on the Los Angeles campus. The library was started in 1883 when Los Angeles had a population of 12,000 people. Like the Berkeley library, it has experienced rapid growth in recent years. Between 1883 and 1955, library collections grew by 1 million volumes. Yet between 1955 and 1971, its collections grew by more than 2 million volumes. Today the library has 21 branches and possesses many collections of national importance.

The origins of the library on the San Francisco campus date to the founding of the San Francisco Medical College in 1864. The college became affiliated with the University in 1873. In 1906 the library had 2,300 volumes but was substantially destroyed by the earthquake and fire. By 1955 the library had grown to 105,000 volumes and has grown much more rapidly since then. Today its collections include history and sociology, besides medicine, and numbers over 350,000 volumes.

The library at Santa Barbara also dates back to the Nineteenth Century; it was opened in 1891. The campus, though, did not become a branch of the UC until 1944. At first the library grew slowly. By 1913 it had only 250 volumes. Between 1913 and 1962 the collection grew steadily to 168,000 volumes. During the last nine years alone, the collection has grown to 750,000 volumes. The Santa Barbara library has two branches--a science branch which maintains extensive map collections and operates an Oil Spill Information Center, and an art and music branch with substantial stereophonic equipment.

The first UC library founded in this century was at Davis which began maintaining a small collection of agricultural bulletins in 1909. In 1951, when the College of Letters and Science was established, the library possessed 80,000 volumes. A few years later it became part of the University. In 1962 the library had 240,000 volumes, and in the last nine years has grown to around the 900,000 level. The Davis library now maintains collections in many fields besides agriculture, and has law, physics, and bioagricultural branches.

The other UC library with an exceptionally strong agriculture collection is at Riverside. The College of Agriculture library was formally organized there in 1925. When the College of Letters and Science was established in 1951, the agriculture library had 14,000 volumes and the letters and science library had 2,900 volumes. By 1962 they had 178,000 volumes altogether. In the last nine years this collection has grown to about 630,000 volumes. The Riverside library includes a bioagricultural and a science branch.

The UC opened three new campuses during the 1964-65 academic year at Irvine, San Diego, and Santa Cruz. Each library was given 75,000 carefully chosen volumes for its basic collection. The San Diego campus includes the Scripps Institute of Oceanography which started its library in the 1920's and contains one of the world's best oceanographic collections. Today the total collections at the San Diego campus come close to 800,000 volumes. Besides its oceanography branch, the library has a science branch and a biomedical branch. The biomedical branch, in turn, has its own branch library at the county hospital.

The Irvine and Santa Cruz campuses were not able to incorporate any previously established libraries into their collections. Today Irvine possesses over 400,000 volumes and operates a medical branch library. The Santa Cruz library contains about 350,000 volumes.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

PART I: THE DEVELOPMENT OF THE LIBRARY COLLECTION

CHAPTER I: THE RATE AND COST OF LIBRARY GROWTH

Growth in the UC Library Collection

Because our report is concerned with the development of overall University of California library resources to a degree consistent with needs, funding and relative priorities, we begin by examining the UC library collection's growth for the period June 30, 1961, to June 30, 1970. The starting date was selected because this began a ten-year growth plan specified by the Regents and approved by the Governor and Legislature.

The original goals called for an approximate doubling of the overall collection during the ten-year period. The program was to be financed through the University General Fund which is funded almost entirely from the State General Fund. Table 1 shows the initial collection size, the goals, and the actual collection size reached by June 30, 1970 (one year prior to the original planning period end).

Table 1

<u>Campus</u>	<u>Size of Collections 6/30/61</u>	<u>1970-71 Goals</u>	<u>Size of Collections 6/30/70</u>
B	2,607,000	3,675,000	3,845,000
LA	1,556,000	3,000,000	2,917,000
SF	143,000	250,000	339,000
D	207,000	725,000	817,000
R	150,000	525,000	585,000
SB	145,000	650,000	742,000
SD	45,000	350,000	708,000
I	--	250,000	389,000
SC	--	250,000	311,000
	<u>4,853,000</u>	<u>9,675,000</u>	<u>10,653,000</u>

Source: Library Goals for Size of Collections, Office of the President, Vice President - Planning and Analysis; and Size of the Libraries of the University of California - 30 June 1970.

As illustrated, the University exceeded its ten-year goals within nine years. However, several factors must be considered in interpreting this achievement:

. . . the original 725,000 volume goal for UC Davis had to be adjusted when law and medical schools were added (volumes in the general library numbered 700,000 in 1970, below the target goal).

. . . similar considerations . . . apply at Irvine, San Diego, Santa Barbara, and Santa Cruz.

. . . goals were for budgeted books only, whereas collections include other acquisitions as well, for instance the 6,000-7,000 carefully selected books contributed to San Diego by the community each year.^{8/}

This analysis is not intended as a criticism of the goals, nor of the University for adopting them. Planning is an essential part of sound management. As the University has pointed out, present criteria of the California State Department of Education would have called for 1,095,000 volumes at Davis in 1969-70. Similarly, U.S. Office of Education standards would have allowed Davis 2,150,000 volumes.^{9/}

Thus, although the goals were originally looked upon as being ambitious, persuasive arguments could now be made for even larger goals, given existing conditions. These include:

- . The establishment of new professional schools.
- . Increases in enrollment and faculty size.
- . The presently assigned roles of the various campuses.
- . Duplication of graduate degree programs and research programs among the campuses.

- . University library policies which, in our opinion, call for a high degree of self-sufficiency on the part of the individual campus libraries.
- . The aforementioned "publication explosion."

There is no doubt about the desirability of the ten-year plan. As expressed by Charles J. Courey, University Associate Director of the Budget:

Establishment of goals for the 1960's served a very useful purpose. The 1970-71 goals enabled systematic planning for size of collections, staffing and space. During years of budget stringency, the University was able to devote larger resources to libraries than would have been the case without specific goals. The goals were an asset in terms of establishment of internal priorities and in external negotiations.^{10/}

Therefore, during the 1960's the State provided financial support which enabled the University to more than double its library collection in a decade, even though the last three years of this period have been, as categorized by Earl F. Cheit, a turning point in the public financing of higher education, from the phenomenal growth rate lasting from the 1950's to the mid 1960's.^{11/}

Because the University has adopted an even larger collection acquisition program for the next decade, we also conclude that achievement of the initial goals has not met desires for substantial collection expansion. This, then, leads us to consider future library acquisition plans and their cost implications.

Future Collection Acquisition Plans

The realization that the 1970-71 library growth goals would be met during 1968-69, and the input of the many new factors have resulted in needs or desires for access to more volumes. Therefore, the University Office of Planning and Analysis formulated its current interim policy for further collection growth early in 1968. Budget criteria were adopted which ". . . permit future planning, campus initiative, and simplification (e.g., how to handle acquisitions not funded by the State)."^{12/}

The current goals (or budget criteria) call for (1) a four percent annual expansion in volumes at Berkeley and Los Angeles, and (2) an annual acquisition increase for all other campuses combined, equal to their combined growth in student enrollment as measured by increases in the Fall - Winter - Spring quarter unweighted increase in full-time equivalent student enrollment. Distribution of this amount is to be made by the University President, after his review of campus proposals.

Table 2 shows the University's May 1968 ten-year library expansion plan for the overall collection.

Table 2

Current Goals for Library Growth

<u>Year</u>	<u>Total Collections</u>	<u>Volumes Added</u>
1968-69	9,755,000	570,000
1969-70	10,385,000	630,000
1970-71	11,061,000	676,000
1971-72	11,797,000	736,000
1972-73	12,587,000	790,000
1973-74	13,434,000	847,000
1974-75	14,341,000	907,000
1975-76	15,307,000	966,000
1976-77	16,338,000	1,031,000
1977-78	17,434,000	1,096,000

Source: Library Goals for Size of Collections, Exhibit I.

Thus, if given sufficient State resources, the University plans to expand its collections by 8.5 million volumes during the decade July 1, 1968 to June 30, 1978. This planned expansion exceeds the 1961-1971 goals of 5 million additional volumes by 37 percent, and the actual growth in that decade by 12 percent.

During the first years of its new growth plan, the University has not met its goals because of budgetary restraints. However, the plan is still in force and presumably guiding library acquisitions. Our purpose in discussing the goals, then, is to allow estimates to be made as to their cost implications if carried out. This we do next.

Costs of Past Library Growth

We will begin by examining the costs incurred in achieving and surpassing the University's last ten-year plan. Because this was a period of general inflation, costs are expressed in both actual and constant (1969-1970) dollars.

Table 3

University Expenditures for Libraries (Does not include Building Construction and Maintenance Costs)

<u>Year</u>	<u>Actual Expenditures</u>	<u>Expenditures in 1969-70 Dollars^{a/}</u>	<u>Annual Increase in 1969-70 Dollars^{a/}</u>
1961-62	\$ 7,617,917	\$ 9,446,217	
1962-63	9,042,976	11,122,860	\$1,676,643
1963-64	10,278,928	12,437,503	1,314,643
1964-65	13,159,924	15,660,310	3,222,807
1965-66	15,134,480	17,555,997	1,895,687
1966-67	18,229,645	20,599,499	3,343,502
1967-68	21,911,095	24,102,204	3,502,705
1968-69	24,886,789	26,131,128	2,028,924
1969-70	27,981,764	27,981,764	1,850,636

^{a/} Based on Consumer Price Index.

Source: BD 110's for the nine campuses.

During the period 1961-62 to 1969-70 the libraries added 5.8 million volumes to their collections; annual library expenditures in actual dollars increased to 3.6 times what they had been when the period commenced and almost tripled in constant dollars. Annual increases averaged \$2,059,505 in constant dollars for average library collection additions of two-thirds of a million volumes.

Future Cost Predictions

Based upon these past acquisition costs, costs of achieving the University's new plan are potentially very large. At this rate, the planned 1970-71 to 1977-78 average acquisition of 881,125 volumes per year would require budgetary increases for library purposes of over \$2.7 million annually (in 1969-70 dollars) over the 1969-70 expenditure base of \$28 million dollars. By 1977-78, budgeted funds for library acquisition would have climbed to \$50 million annually, even if there is no inflation. This, of course, does not include physical facilities construction or maintenance costs.

However, during the 1961-62 to 1969-70 decade, library costs apparently rose faster than general prices. While the Consumer Price Index rises averaged 2.8 percent a year, library salaries rose 4.7 percent and book prices, 7.9 percent. An analysis of the cost data presented in the most recent Bowker Annual shows the annual rate of inflation for monographs and serials to be about 18 percent, and that for science periodicals to be about 26 percent. The University, in its 1972-73 budget, estimates that a 23 percent inflation will occur during the current year.13/

It may therefore be instructive to consider the future costs just discussed in actual, rather than 1969-70, dollars. If library acquisition costs continue to inflate faster than general costs, our estimate that an addition \$2.7 million 1969-70 dollars will be needed annually to fund planned library collection growth is understated. A much higher proportion of public income would go to library support than would occur if library prices and general wages and salaries rose at the same rate. For example, a 10 percent inflation of library costs per year would raise the expenditures needed by 1977-78 to achieve library goals from \$50 million to \$110 million.

Even without additional inflation, funding the planned level of library expansion by increasing expenditures \$2.7 million every year over the current \$28 million annual expenditure appears to be an unrealistic expectation. As Rutherford D. Rogers, University Librarian at Yale, observed:

I venture to assert that we have reached, if not surpassed, in many cases the capacity of the University budgets to support the library growth rate characteristic of the last two decades. . . I believe we have already entered on a plateauing of acquisitions budgets and growth rates that up to now have followed an amazing upward curve. . . ^{14/}

Questions for Consideration

The cost projections discussed above raise several questions which we believe need resolution:

1. Should the public increase its support for the University so that its library acquisition goals may be met, recognizing that so doing will probably cost far in excess of \$50 million annually (in 1969-70 dollars) by 1977-78?

2. Alternatively, would the University find other means of financing this planned increase with the recognition that this would probably be done at the expense of other University objections?

If, as we would expect, exploration of the above questions by the President of the University and the Director of Finance leads them to conclude that neither alternative (or some combination thereof) is viable, then some other approach must be developed.

Therefore, the next chapter will explore library collection composition and use, with the objective of providing information that will be helpful in seeking alternatives to the projected high expenditures.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

CHAPTER II: COLLECTION COMPOSITION, USE, AND COST COMPONENTS

Introduction

The University's current budget criteria provide 4 percent annual increases in volumes at Berkeley and UCLA and increases for the other campuses combined based upon their overall increases in full-time equivalent students. Although simple budget guidelines and a planning base are essential, the selection of these particular guidelines seems to indicate that, except for Berkeley and Los Angeles, library needs are a function of student body size. If this were true, the size of the library collection would be dependent upon (1) student use, and (2) use by the faculty in preparing to educate students. As we shall see later, however, this is not the case at UC libraries.

Because we believe it will prove desirable, and perhaps essential, for the University to reexamine and restate its library acquisition goals and policies, we next address the questions: "What is a University library collection comprised of?"; "To what use is it put?"; "For what purposes are new acquisitions to be made?"

The Core and the Research Collection

In examining the questions posed above, it is useful to distinguish between a library's "core collection" and its "research collection." While no discrete line can be drawn between them, the categories proposed are generally recognized by the library profession and will prove useful in the following discussion.

The core collection can be looked upon as that body of knowledge which is currently most important and acceptable in each discipline, usually written by the leading scholars in each field. Within it are contained the required readings put on reserve for undergraduate and graduate courses--these materials, of course, receiving the heaviest use of all library materials. Next heaviest in use are the materials students consult in other reading assignments and in completing term papers and similar projects. Together, these course related materials constitute the core collection in each subject area. Their heavy use often requires the availability of multiple copies. It is reasonable to assume that the size of the core collection, then, is related to the number of students, to the number of programs offered, and to the course content of the curricula of each program.

The research collection is, in comparison, much larger. It contains substantial quantities of materials written in each field in which the library is maintaining a collection. Research collections are so large because of the scope (subjects covered) and depth (works collected in each subject) of their coverage. Collection size has been greatly influenced by the recent upswing in the quantity of research and publishing.

The research collection is of great importance. Its function, however, is related more to the University's role in the expansion of knowledge than to its role of educating students below the doctoral dissertation levels. The main use of the research collection is by faculty or by doctoral candidates researching highly specific topics in great depth. Far from being consulted by hundreds of students each term, as is the case with most of the core collection, individual items within the research collection are used infrequently. Some materials may be consulted only once or twice during their entire lifetimes.

The distinction made here, then, between the core collection and the research collection rests upon (1) the relative size of each collection, (2) the major purpose of each, and (3) the relative frequency with which each item within the collection is consulted.

We were unable to determine precisely either the size or the relative use of the University's present and planned core and research collections. This is because the University, in common with all libraries with which we are familiar, makes no such distinction in ordering or cataloging materials. Therefore, two indirect approaches have been attempted; (1) that of using professional opinions, and (2) that of using those studies that have been conducted of library use. In addition, we further verified our conclusions by statistical analysis which allowed us also to estimate past expenditures for core and research collections.

Professional Opinions about Core Collection Size

Mr. J. R. Blanchard, University Librarian at the Davis Campus, has estimated that the core collection should contain between 50,000 and 125,000 volumes.^{15/} The much discussed Clapp-Jordan formula suggests that 50,750 volumes would constitute the basis for an undergraduate library.^{16/} And Mr. M. J. Voigt, University Librarian at the San Diego campus, compiled a list of 75,000 volumes which was used in acquiring the original collections on the three new campuses at Irvine, San Diego and Santa Cruz.^{17/}

Considering the complexity of the subject, this is a fairly narrow range. Even the largest estimate of core collection size is small when compared to the total number of volumes currently held or planned for acquisition by the University for its several campuses. Consequently, our logic is not sensitive to differences in core collection estimates presented here.

Therefore, the needs of a core collection are quite modest when compared to those of a research collection. This can best be illustrated by comparing the high estimate of 125,000 volumes with the data presented in Table 1 above, portraying the June 1970 collection size and distribution. The two largest libraries, Berkeley and Los Angeles, contained respectively 3,845,000 and 2,917,000 volumes; Davis had 817,000 volumes; Santa Barbara - 742,000; San Diego - 708,000; and Riverside - 585,000. To put this data in perspective, in 1955 UCLA possessed approximately 1 million volumes. Thus, most library development by these larger campuses in the past 10 years has been the acquisition of research materials.

Thus, whether the core collection should contain 125,000 volumes, the high estimate, or even more, is immaterial for our purposes. Every general campus library appears to have an adequate collection for "core" needs, i.e.--those related to the teaching of students.

It should not be inferred that we are suggesting that any UC campus be limited to a core collection. As the University pointed out, "Core collections ranging in size from 50,000 to 125,000 volumes may well be suitable for a substantial portion of undergraduate use, but there would seem to be serious question that collections of this type could suffice for a university campus . . ."^{18/}

The opinions cited, however, substantiate our intuitive belief that a large portion of a university's library holdings are for purposes other than direct or indirect use in the education of students. Put another way, the bulk of the library collection of the University is for research purposes. This conclusion is borne out when we examine the library usage data that we have been able to locate.

Library Usage

The University of California, Berkeley library analyzed circulations in its loan stack department, from July 1968 through December 1969:

The loan stack collection comprises approximately half of the total Berkeley holdings and does not include titles on reserve for undergraduate use. During that period, 16 percent of the titles held by the loan stack were circulated (240,604) and 35 percent of these titles (83,645) were circulated at least twice (77,116 more than twice).^{19/}

The meaning of this data can be portrayed by the following tables:

Table 3

UC Berkeley Library, July 68 to Dec. 31, 1969

<u>Category</u>	<u>Approximate Size in Volumes^{a/}</u>
Total UCB library collection size	3.0 mil.
Loan stack collection	1.5 mil.
Other collections	1.5 mil.

^{a/} This is the average size during that period.

Table 4

Analysis of Loan Stack Use July 1, 1968, to December 31, 1969

Total Loan Stack Collection 1.5 million volumes	
.24 mil.	Volumes circulated one or more times
.08 mil.	Volumes circulated more than once.

In interpreting the above data, it should be emphasized that we have no way of knowing whether loan stack collection use is representative of total library use. Presumably, the materials "on reserve" would achieve much higher use rates, but constitute a very small portion of the collection.

Materials in the branch libraries may receive heavier--or lighter-- use than those in the loan stack. Archived materials would undoubtedly receive lower usage. We also do not know about in-library use of the loan stack materials--undoubtedly, materials were used in the library without being checked out for loan.

However, from the circulation data given, it is clear that a relatively small proportion of the total collection is supporting the major amount of use. This tends to verify the conclusion that core collection needs (which are related to student needs) are relatively small compared to the total size of a large research library, and that much of the research collection is indeed consulted infrequently.

There is professional agreement about the relative frequency with which research materials are used. Gordon R. Williams, Director of the Center for Research Libraries, has observed:

. . . Fussler and Simon's study of patterns of use in large research libraries found that in some fields in the humanities and social sciences, such as Germanic languages and literature and economics, as many as 25 percent of the volumes in the collection are used no oftener [sic] than once in a hundred years. Trueswell's study at Northwestern found that in the humanities and social sciences, over 99 percent of the use was concentrated on only 60 percent of the collection. Put another way, 40 percent of the collection is being maintained to satisfy less than 1 percent of the total use. In the case of science and technology the concentration was even greater, as one would expect in disciplines where older materials are usually less significant. Here he found that over 99 percent of the use was concentrated on only 25 percent of the collection and that 75 percent of the collection was being maintained to satisfy less than 1 percent of the use.

With less than 1 percent of the total use falling on 40 percent--75 percent of the total collection, it is readily understandable why as much as 25 percent of the collection is used no oftener [sic] than once in a hundred years.^{20/}

Conclusions

The discussion presented above suggests that the answers to the questions posed at the beginning of this chapter are as follows:

1. A library collection at a major university comprises both a core and a research collection. The core collection is relatively small, say in the neighborhood of 125,000 volumes or possibly more, depending upon the number of multiple copies needed and the programs offered. The research collection comprises the balance of the collection, which can number hundreds of thousands or even millions of volumes as it does at Berkeley, UCLA, Riverside, Davis, Santa Barbara and San Diego.
2. Volumes in the core collection receive heavy use from students in doing course work and, presumably, from faculty preparing to educate students. Most volumes in the research collection receive very limited use. Between 40 and 75 percent of the materials may be maintained to satisfy less than 1 percent of total use. At UCB, if we assume that Loan Stack Collection use is representative, the usage may be even more skewed.
3. The bulk of the new acquisitions planned for the University of California's library system, then, are to meet faculty and doctoral student research needs, not those of the general student body or of the faculty in preparation for the education of students. This conclusion is based upon the modest size requirements of the core collection and the data we have located on library usage.

It is our belief that further insight may be gained by a statistical examination of the variables which are related to the expenditure of funds for acquisitions. We have addressed ourselves to this problem in the next section.

Cost Components of Library Acquisitions

While library activities may be viewed as the acquisition, processing, and circulation of (1) core collection and (2) research materials, in practice expenditure records for these two categories are not kept. Therefore, an estimate of costs by category was obtained through the use of a stochastic model. For a detailed description of our data sources, operational definitions, assumptions and methodology, see the Methodological Appendix.

We performed a regression of library expenditures on enrollment, faculty size, and the number of graduate programs offered. It was assumed that, under present arrangements, enrollment would influence core collection expenditures, and that expenditures for research would be a function of (1) faculty size, and (2) the number of graduate programs offered. The regression was designed to show the impact of each of these variables upon library expenditures, permitting a breakdown to total expenditures into expenditures for (1) core collection facilities, and (2) research facilities.

We are aware that dichotomizing library operations into course-related and research functions is an abstract exercise to a certain extent. While many of the books the UC libraries contain are exclusively used for either course work or research, others are not. In addition, it is clear that behavioral phenomena such as staff time devoted to

processing and circulation as well as the maintenance of physical facilities are not easily divisible into these two categories (although a thorough cost accounting system could undoubtedly do so). Empirically, usage rates are better depicted on a ratio rather than a nominal scale. However, all available evidence indicates that such a great portion of total use is concentrated in such a limited portion of the total collection that it becomes fairly accurate to view the core facility as being relatively bounded and distinct from the research facility. This distinction allows us, then, to theoretically separate library activities into two functions, and consider (1) the possibility of centralizing the holding of lesser-used materials, and (2) the savings that may result from such a program.

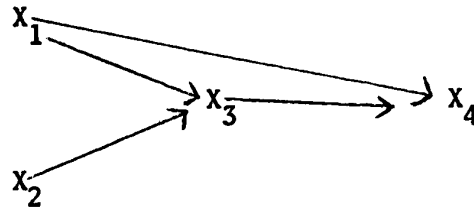
To get from the conceptual to the empirical level, we must decide upon variables to operationalize these theoretical constructs. We would agree with those philosophers of science who maintain that there is no epistemic correlation between these two levels of knowledge. The task, then, becomes choosing the most reasonable measurements of these concepts.

We would conclude from all available information that the size of these two collections is most influenced by the numbers of programs and users on campus. Formulations such as Clapp-Jordan's and others represent collection sizes in terms of the numbers of student and faculty users as well as the number of graduate programs. State budgeting for libraries is based mainly on enrollment levels. And all librarians interviewed considered their purchasing decisions governed mainly by (1) the needs of the various academic programs represented on campus, (2) the requests of individual faculty members, and (3) the requirements of the student body. We therefore consider it most useful to operationalize core collection expenditures as a function of student enrollment, and expenditures for research facilities as a function of faculty size and the number of graduate programs offered.

The analysis suggests the following model:

Figure 1

Factors Influencing Library Expenditures



Where: X_1 = student enrollment
 X_2 = the number of graduate programs offered
 X_3 = faculty size, and
 X_4 = library expenditures

The regression equation for library expenditures is:

$$X_4 = \$500,692 + \$37X_1 + 3,123X_3$$

The model states that:

- . Library expenditures are a function of the size of student enrollment and faculty size.
- . Faculty size is a function of the size of student enrollment and the number of graduate programs offered. (The model, of course, is an explanation of aggregate behavior and should not be interpreted as a description of the workings of any individual campus or library during any given year.)
- . Student enrollment affects library expenditures directly. It also has an indirect effect through its influence on faculty size.

- . Faculty size has a direct effect and, in fact, is the largest single determinant of library expenditures.
- . Graduate program levels affect library expenditures only indirectly by influencing faculty size.

The regression equation indicates that library expenditures on each campus were based on the following parameters from 1961-62 to 1969-70:

- (1) \$500,692 as a base operating cost, without workload being considered;
- (2) \$37 per enrolled student; and (3) \$3,123 per faculty member.

Earlier (page 18 - 20 above), we defined the core collection as course-related materials used primarily by students, and the research collection as materials used primarily by faculty or by doctoral candidates in researching highly specific topics. Using the regression parameters, core collection expenditures for each campus equals the base operating cost (\$500,692), plus \$37 multiplied by the total enrollment, which represents the expenditures for the primary users of core collection facilities--the students. Furthermore, library expenditures for research facilities at each campus will approximate \$3,123 multiplied by the size of the faculty, which represents expenditures for the principle users of research facilities--doctoral students writing their dissertations and the faculty themselves.

Our use of regression analysis to explain library acquisition expenditures is not to be construed as showing that we believe UC library's function mainly in a "passive mode", which one UC librarian has suggested was our "underlying assumption."^{21/} We recognize that ". . . the major factors in collection development are associated with teaching and

researching programs in the institution",^{22/} and that librarians select the categories of material which they acquire based upon the assigned role of the library and of the campus on which it is located, together with the demands placed upon the library by its clientele. We feel, however, that the analysis does demonstrate that by far the major portion of library expenditures are for the research collection, and that this is primarily for faculty use.

The total cost, then, of maintaining library research facilities on the six smaller general campuses during 1969-70 is estimated to be in excess of \$7.6 million, and the cost of maintaining core collections on these campuses is estimated at \$4.6 million. These estimates provide a tentative basis for calculating the savings potential of measures producing an economy of centralization, as we have done in the next chapter. But first, we will examine the potential and the present state of interlibrary cooperation and coordination.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

CHAPTER III. INTERLIBRARY COORDINATION AND COOPERATION

Introduction

If the University of California's library acquisition needs under its present library growth policies are beyond its financial ability, obviously other alternatives must be sought to satisfy library user's needs or these needs must be revised downward. One avenue is through greater interlibrary coordination and cooperation in the development and use of the research collection. If, as we have concluded in preceding chapters, core collection needs have largely been met and additional expenditures in that area are for keeping it current and operating, then the bulk of the \$30 to \$50 million annual expenditures that we have estimated will be required if University's collection acquisition plans are to be met would be for research materials. Therefore, we now turn our attention to opportunities for coordination and to an examination of present library coordination activities between the various campuses.

The Feasibility of Coordination

Since large amounts of library acquisition expenditures are for infrequently used materials, it would seem that alternatives to the continued development of independent campus research collections should be considered. Among the alternatives accepted within the library community is that of centralizing research materials so that libraries become increasingly interdependent rather than independent.

Douglas W. Bryant, the Harvard University Librarian, has this opinion about self-sufficiency for research libraries:

Always chimeric to a degree, the whole concept is by this time simply fanciful. I am convinced that the only logical alternative doctrine is interdependence among libraries for the provision of materials required for research. This inescapable reality means, of course, that more and more frequently than in the past scholars must expect to find that needed resources are not in their own libraries but are accessible in one form or another from collections elsewhere.^{23/}

He recommends the establishment of regional or national centers to make important research materials available to other libraries. And Rutherford D. Rogers has added "Were we to put our shoulders to a really efficient centralization operation, we might do more for our individual budgets than any single step we could take."^{24/}

Management experts are also optimistic about the possibilities for economies of centralization in library operations. Booz, Allen, and Hamilton, in a report for the Association of Research Libraries and the American Council on Education, recommend that "increased interinstitutional cooperation in the use of library resources . . . be pursued more aggressively," and go on to criticize the inadequacy of present arrangements.

For the most part, it appears that consideration of interinstitutional opportunities for more effective resource utilization has low priority in library planning. Opportunities for regional and national linkages among libraries to (1) minimize duplication of collections, (2) maximize collection strengths, and (3) improve access to holdings are not routinely and aggressively explored in university and university library planning. Rising operating costs, the continued growth in numbers of publications and the increasing demand of scholars for access to broader and more specialized collections require concerted efforts to effect close interinstitutional linkages of research library resources.^{25/}

Several of the librarians at the University of California, while agreeing with the concept of interdependence, have also raised questions about its feasibility, particularly at the State level. The major obstacles appeared to be (1) faculty dissatisfactions; (2) the presently insufficient coordinative mechanisms, and (3) the librarians' perception of their primary role as the meeting of faculty needs and desires:

- . The holdings of libraries generally reflect academic requirements, . . . some librarians are criticized by faculty members for not pressing more vigorously for larger libraries . . . All purchases are based upon academic need, with priorities carefully worked out with faculty members.^{26/}
- . . . savings would not be as great as envisioned and would be obtained only at a tremendous hidden cost, for instance of faculty and student time and convenience. Apart from ordinary irritations, there are real problems of conflicting needs, delays in getting material (serious in a 10-week quarter), backlogs in photocopying, needs for seminar and reserve use, etc.^{27/}
- . In many research situations scholars are either unable (because of time and money restraints) or unwilling to exhaust the resources of widely separated institutions.^{28/}

Thus, we have two interrelated dilemmas--(1) library collection needs or desires as expressed by University library growth goals versus what is probably an unacceptable funding requirement; (2) the recognition that much of the material to be acquired would be used very little and hence is suitable for use on an interlibrary basis versus real concerns about faculty needs or desires to have the materials immediately accessible on their own campuses. It would appear probable, however, that large opportunities exist for savings in the future development of University of California libraries through the establishment of economies of centralization. To put the problem in perspective, we next examine current interlibrary cooperation at the University.

Interlibrary Cooperation at the University of California

The administrative and budgetary convergence of the nine UC campuses at the universitywide level would appear to provide extraordinary possibilities for developing a fully coordinated library system. Indeed, in terms of coordinating efforts to share existing facilities, UC considers itself to be one of the most advanced in the nation. Considerable foresight and sagacious planning have developed a multiplicity of resources which are available to all campuses. The development of such a system has undoubtedly made a large contribution toward the preeminence enjoyed by the University in both teaching and research. However, library planning does not seem to have included a policy of cooperative collection development. In this area, each campus appears to be developing, in the main, independently of the others.

The present policy is well expressed in a ten-year growth plan recently formulated by Irvine, one of the newer campuses:

No significant increases or decreases in . . . cooperative collection development programs are assumed . . . Cooperative collection programs, whereby collections of lesser-used materials would be maintained centrally for the use of several cooperating institutions, are the subject of much current discussion, but little action.^{29/}

Indeed, that self-sufficiency of the research collections on the individual campus libraries forms the basis for present library expansion goals is clear from statements of the campus librarians. Most informed us that they were intent upon developing as complete a research library as possible, with minimum reliance placed upon the Berkeley and Los Angeles collections.

Based upon our observations, the libraries on the smaller campuses have been successful, to date, in pursuing this stated objective. Three have grown to almost 1 million volumes and current plans foresee the 2 million-volume level by the end of this decade. The others are around the half-million mark and are building toward a million volumes. The significance of this can best be obtained by comparing it to the July 1, 1961, collection size at Berkeley, 2.6 million volumes and Los Angeles, 1.6 million volumes. Thus, at the present growth rate, the University will have developed eight completely self-sufficient research libraries of 2 to 3 million volumes each by the mid 1980's.

All of the campuses are developing substantial research collections in all fields represented by campus departments. Although this process is far from completed, the smaller campuses already have sizeable research facilities. Indeed, most of their acquisitions during the past decade seem designed to augment the research collections and certainly this is the main purpose of planned expenditures.

The University has advised us that attempts are being made to avoid duplications of little-used materials:

Most of the smaller campuses do make a practice of checking holdings at Berkeley and Los Angeles before buying esoteric or little-used publications outside of their own special charges (such as Oenology at Davis or Oceanography at San Diego); relatively little material of the type that will be used only once or twice during its lifetime is bought . . . what is developing is a set of nine distinctive collections available to all campuses.^{30/}

However, the opinions from the University librarians cited above appear to confirm our observations--that while there are some attempts to avoid duplications, the ability of the individual campus library to support the educational and research needs of its faculty--independently of the other libraries--has been given overriding consideration.

An example of the diseconomies which can result from this policy is the acquisition of the Irish University Press edition of The British Parliamentary Papers by seven UC campuses. This edition is a 1,000 volume compilation of the annals of the British Parliament during the Nineteenth Century. The price paid for the Papers by each campus varied somewhat, ranging between \$45,000 and \$60,000. The only campuses that did not purchase them were Riverside and the San Francisco medical campus. Riverside did, however, purchase a microfilmed set of the Papers for \$9,000. Altogether then, the University's investment in this single work was above \$350,000, not including processing costs.

While we are not questioning the Papers' potential for scholarly use, we are concerned that well over one-third of a million dollars was spent to acquire a set by each of the general campuses. Surely, some cooperative and coordinated effort could have avoided this large expenditure. Moreover, the benefits resulting from the purchase of the sets as bound editions, instead of the microfilmed sets, do not seem to justify the additional cost, even if each campus did "need" to possess a set itself.

In addition to duplications of collections between campuses, intracampus duplications also exist, especially on campuses with branch libraries. For example, one campus found, a year and a half ago, that it was

duplicating 814 of its journal subscriptions at a total annual cost of approximately \$50,000 for the duplicate copies. Most other campuses have not kept track of the total number of duplicate subscriptions they receive and, consequently, are not able to control duplication.

However, some libraries are taking steps to control these duplications:

Berkeley, for example, is in the process of completing a review of all purchased serial titles (including journal subscriptions) to cancel duplicate subscriptions whenever possible and to reduce the amount of money spent in this area.31/

UCLA, in order to exert control, requires selecting departments to choose between purchases of a duplicate and purchase of a desired new publication.32/

To summarize, existing library goals appear to be intent on making each campus library an independent research library, and there appears to be significant collection duplications both between and within campuses. We will now explore in more depth present University activities for interlibrary coordination.

Present Interlibrary Coordination Attempts

In its comments on the original draft of this presentation, the University informed us of some of the steps it is taking to achieve greater coordination among its libraries.

- . The present systems within the University for dissemination of bibliographical information regarding holdings and for interlibrary lending can and should be improved. Work on the former area is already at an advanced stage and will soon have far-reaching effects as a result of the effort of the nine campus libraries, the library Systems Development Program, and the Institute of Library Research. Interlibrary lending among the nine campuses, in spite of a series of improved

procedures in the recent past, continues to be an area beset with difficulties and one that is less than totally satisfactory in operation. Some of the reasons for this situation lie in lack of funds to effectuate fast and efficient delivery of materials. Additional improvement might also come from the application of technological aids in communications and responding to requests for materials; installation and use of these devices have not been possible because of funding restraints.^{33/}

. Much more cooperation goes on than indicated. A plan for automated handling of ordering and circulation has been worked out universitywide (though not implemented, for lack of funds). University librarians and other staff members from the Library Council, which meets twice a year and is in constant contact with library staff help, on such matters as continuing reviews of library organizational structure, library research, insurance, and surveillance of the Union Catalog, the Library Systems Development Program, and other matters of common interest.^{34/}

These are impressive steps towards increased cooperation. However, it is apparent that the priority of these activities is lower than that of acquisition. Several mentions were made of inability to implement or to fully develop significant cooperative processes because of a lack of funds while total library budgets are at the \$30 million level. The opportunities to achieve greater coordination appear promising, especially if these activities receive higher priority than collection acquisitions.

Study Findings and Conclusions Concerning Coordination

The major cooperative activities that we found during our study included the following:

- (1) the reproduction of the catalogs of the Berkeley and Los Angeles libraries for use on other campuses of the University;

- (2) Systemwide borrowing privileges for all faculty and graduate students;
- (3) Interlibrary loan facilities;
- (4) The use of an intercampus bus system for interlibrary use purpose.

Interlibrary loans, in our opinion, form a good measure of cooperative collection efforts between the various campus libraries. We found that they have declined by 20% in the last two years, instead of increasing as would be expected because of the increase in both the number of potential borrowers and potentially borrowable items.

TABLE 5

Interlibrary Loan: Returnable Titles Borrowed
From other libraries within the UC System

<u>By</u>	<u>1967-68</u>	<u>1968-69</u>	<u>1969-70</u>
B	705	766	766
D	3,305	2,805	2,492
I	1,844	1,710	1,938
LA	2,265	1,951	1,671
R	2,661	1,903	1,773
SD	2,023	1,913	1,848
SF	254	257	306
SB	3,482	3,116	2,785
SC	<u>830</u>	<u>811</u>	<u>479</u>
Total	17,369	15,232	14,058
% Decrease		(12.3)	(7.7)

Source: "Size of the Libraries of the University of California," 30 June 1968, 1969, and 1970; Interlibrary Loan Tables.

As the University has pointed out, photocopies in lieu of loans may be increasing in importance. These too have decreased for the three-year period for which we have data:

Photocopies Between UCLA and Other UC Campuses
In lieu of Interlibrary Loans, 1968-69 to 1970-71

Year:	1968-69	1969-70	1970-71
No.	11,383	10,207	9,892

Source: Office of the Librarian, UCLA.

Therefore, both measures support the conclusion that coordination is decreasing. While the University feels that the decrease may, in part, be due to user dissatisfaction, we are convinced that the primary reason is that the smaller campuses are duplicating the research collections of Berkeley and Los Angeles, and therefore, becoming increasingly less dependent upon interlibrary loans. If the materials were actually needed and not available at the "home" campus, there would be few alternatives to the use of interlibrary loans, or photocopies in lieu of loans. If indeed dissatisfaction with existing services were a major reason for the decline, then this is again an example of the relatively low priority that cooperative activities receive in their competition with acquisition activities for funding.

The intercampus bus is another example of cooperative/coordinative activities. The bus carries interlibrary loaned books as well as faculty and graduate students between the northern campuses and Berkeley and the southern campuses and Los Angeles. The intercampus bus, however, also carries mail, light freight, financial journals, budget journals, invoices, checks, ledgers, and data processing materials besides people and books. While the University has advised us that "The limitation on the use of the intercampus bus for library purposes is not space, but student and faculty time . . ."^{35/}, we observed and were informed that

many wishing transportation were excluded for lack of space. There are, in fact, priorities in seating based on space. Students are allowed to board only if there is any room available after all faculty, staff, and mail have boarded.

To summarize, while the libraries have done and are doing much to facilitate interlibrary cooperation and coordination, there are several indications that these efforts are decreasing. In our opinion, substantial opportunities for increased cooperation/coordination exist which should be explored and exploited, especially in the area of collection development.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

CHAPTER IV: SUMMARY OF FINDINGS AND CONCLUSIONS

Chapter I

We found that the combined libraries of the University of California experienced an unprecedented growth in collection size during the decade of the 1960's. However, even though its total collection more than doubled, its needs and desires for additional expansion continued to grow. A number of reasons are involved, including an equally phenomenal growth in the quantity of printed material, and an expansion in student population, graduate programs and professional schools as well as in the number of general campuses. These factors interact with apparent University policies for maximum self-sufficiency of its campus library collections.

Consequently, new library expansion goals have been stated which would almost double the collection again by 1977-78.

Based upon the costs of the first expansion program, which helped to raise library expenditures to \$28 million annually by 1969-70, the new program would be very expensive to achieve. Costs would begin at almost \$31 million per year and would increase by over \$2.7 million annually in 1969-70 dollars. At this rate, 1977-78 annual expenditures would exceed \$50 million dollars, disregarding inflation. If library costs inflated at 10 percent annually, these costs could reach \$110 million per year in 1977-78.

Chapter II

Because it appears doubtful that the funding levels to achieve the University's library collection goals can be reached, we began investigating alternatives. We found that a relatively small percentage of the planned acquisition was for the core collection--relating to educational uses below the doctoral dissertation level, and a large percentage was for research, which relates to faculty and doctoral research needs. We further concluded that all campus libraries had met their core collection needs, so that additional expenditures in that area would be for maintaining its currency and for operating it. However, the bulk of planned expenditures would be for the research collection.

We found that much research material is infrequently used, hence ideally suited for centralization to avoid duplicate acquisitions and to thereby avoid costs.

Chapter III

We explored the feasibility and desirability of increased coordination, as well as present University efforts in that direction.

Our first finding was that professional library and management opinions indicate that library interdependence is in fact feasible and probably necessary, given the increase in publication and the nationwide limits on University budget increases.

However, an exploration of opinions of University of California librarians indicated strong reservations about centralization, primarily on the basis of inconvenience to faculty in reduced immediate home campus support to research efforts and academic programs.

Thus, we are faced with two dilemmas--funding versus stated acquisition needs; and the potential for savings through centralization versus real concerns about the possibility.

Probably because of these concerns as well as because of present University library policies, each campus has been developing its research facilities, in the main, independently of the others. This development has been successful, as measured by current collection size compared to the estimated nonresearch needs of the campuses. It also appears to have caused a drop, within the UC system, in interlibrary loans and photostatic copies in lieu of loans (which could be expected to increase with increases in faculty and student size; thus indicating a greater degree of self-sufficiency of the campus libraries than was true a few years ago.

The independence, however, has resulted in duplications which are expensive and some of which, we feel, can be avoided if other alternatives are implemented. There are also examples of intracampus duplications that some campuses are attempting to control.

Present measures to increase coordination were found to be valuable. However, they apparently receive little of the \$30 million budget, which indicates they have a lower priority compared to acquisition than we believe is warranted.

We have concluded that the cost implications of the planned expansion program make it unlikely that it will be totally funded. Therefore, other alternatives for providing access to the volumes needed for research must be found. The greatest opportunities appear to fall in the area of interlibrary cooperation and coordination in collection development, leading to cost reduction by eliminating interlibrary duplication. Our recommendations and some alternative means for achieving these opportunities are the subject of our last chapter.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

CHAPTER V: RECOMMENDATIONS, ALTERNATIVES AND DISCUSSIONS

Introduction

Our study of library collection development may be viewed as diagnostic, rather than a definitive analysis of the collection area. This is partially because of time restrictions, but other factors, such as the necessity of considering the relationship of the library to other academic functions, are also limiting.

The library collection area is intimately related to the major University academic and policy issues, such as the roles of the individual campuses, the dispersion of the graduate program, the extent of research, and the number of and emphasis to be given to graduate programs. These areas were beyond our study scope, and we were restrained from examining them. Also, without the weighted objectives and criteria for library development, which we believe the University should develop, it becomes impossible to generate a full range of alternatives or to completely evaluate those that were developed.

Therefore, many of our recommendations call for additional study efforts by the University, preferably in conjunction with other organizations. (Recommendation 7, below). Additionally, we have not presented a full range of alternatives, but rather are submitting two, for further development, and for assistance to the University in generating additional alternatives.

Our stated purpose (see Introduction) was to be ". . . of assistance in stimulating debate and discussion, in raising issues, in adding new viewpoints and alternatives and (hopefully) . . . in speeding problem resolution . . ." We feel that the report meets this purpose, and that the recommendations and alternatives presented are worthy of full consideration, top-level attention, and vigorous pursuit to culmination.

Recommendations and Discussion

1. We recommend:

- . That the University re-examine and restate its library acquisition goals and policies, in the light of (a) the University's probable financial inability to meet present goals, and (b) the opportunities for providing satisfactory access to adequate research collections at less cost through increased interlibrary coordination (with consequent decreases in the number of additional volumes needed systemwide.)
- . That the University, if it has not already done so, establish weighted library collection objectives which, whatever the available funding level, would allow the systematic allocation of funds by first funding the highest library acquisition priorities of the overall University.

Discussion

We have concluded that there is a low probability of the University being able to finance its library collection acquisition plans, as

presently stated, for the period ending June 30, 1978. However, any curtailment would be in the area of research materials, not materials needed by students or faculty for the education of students (core material). We also have concluded that trade-off opportunities exist, which would provide University scholars with more comprehensive library research facilities than they have at present, at lower costs, although admittedly with a loss of convenience and time compared to the University's plan for collection augmentation.

Without a re-examination and restatement of weighted objectives and overall collection criteria applicable to the individual collections, we fear that trade-off opportunities will be lost. Equally important, we are concerned that the collection programs of the various campuses will not maximize the use of available resources, since so much would be spent on little-used materials as the individual campus libraries increase their independent research library status. Such a re-examination is therefore a necessity in the immediate future, if collection activities are not to be misdirected.

2. We recommend:

- . That, in future library development, the University give full consideration to the opportunities for economies that can be achieved by centralizing holdings, to avoid the duplication of little-used research material on each campus.
- . That alternatives for achieving these economies through integration be generated and evaluated thoroughly by the University.

Discussion

We have concluded that most of the material that would be acquired under the libraries' acquisition plans is for research purposes, and, as such, that much of it would be used infrequently. The holding of these materials could therefore be centralized without seriously inconveniencing users. One alternative is presented for consideration in the next report section together with guidelines for the generation of others. We believe that more should be generated and that evaluation be completed under the guidance of the weighted objectives and criteria for collection development (Recommendation 1).

3. We recommend:

- . That the University explore in depth the probable consequences on research library needs of the present uncertainties concerning (a) the need for additional Ph.D.'s (b) the levels of Federal and other financing of research and (c) the type of research to be supported.
- . That relatively modest library acquisition goals be established until this study has been completed.
- . That budgetary restraints be used to insure compliance.
- . That the University recognize that a large proportion of its current and future needs for expanded collections are for the use of faculty and doctoral candidates in doing research; and
- . That library needs and costs receive full consideration in decisions to augment faculty size or increase the scope of the doctoral program.

Discussion:

Expert opinion from within the UC system has questioned the need for the number of Ph.D.'s that will be graduated under present forecasts (see Introduction). Others have called attention to the crisis in the funding of higher education and research nationwide. Both graduate programs and research increase the size of the faculty, which, in turn, we have concluded is the largest factor in determining library expenditures. If graduate studies and research are reduced by choice or by necessity, library needs will also decrease. Hence, caution is urged in collection expansion until these issues are examined thoroughly. One way to insure modest library expenditures is by budgetary restrictions and expenditure guidelines.

4. We recommend

- . That consideration be given to the current distribution of graduate programs among the several campuses, to determine if a satisfactory graduate program could be offered at less cost by a redistribution of the programs between the campuses.

Discussion:

As a possible alternative to the centralization of library research materials, graduate programs could be distributed in like groups among the campuses so that the duplication of faculty and library needs between the various campuses would be minimized. However, this recommendation is deeply intertwined with the academic policies and decisions of the University. The generation of alternatives and their evaluation would require an in-depth knowledge of the relationships between

graduate programs, the faculty, and other support overlaps between graduate and undergraduate programs in the same and related areas, a consideration of the affects of changes on the recruitment and retention of an outstanding faculty, and of a number of other areas beyond our study's scope.

Purely from the standpoint of library collection acquisition costs, however, substantial savings would result through the avoidance of duplications. If each program were given at only one campus, then a research collection in a given field might be maintained at only one library. If this were possible and desirable, then savings in the library collection area would approximate those given under the evaluation of "Alternatives for recommendation 2" (below.)

The estimation of costs and benefits outside of the library area are beyond our present study's intentions, and these may far outweigh any library considerations.

Even if widespread reassignment of responsibilities for graduate programs proves not to be beneficial, we urge particular attention to consideration of limiting to one campus any graduate program which has very limited student demand. This includes some foriegn language programs.

5. We recommend:

- . That increasing the interdependence of UC libraries to avoid unnecessary duplication become a high priority University goal.

- . That more funds and a higher priority be given to present efforts to improve interlibrary cooperation and coordination within the UC system, especially in the area of collection development.
- . That particular attention be paid to efforts which will minimize the need for research collection duplications, through the establishment of satisfactory interlibrary loan and photocopy services.
- . That present activities on some campuses to minimize intracampus duplications be continued, increased and expanded to other campuses.
- . That these activities be financed from acquisition funds, as a trade-off measure, with the recognition that their successful completion and implementation will maximize the effectiveness of future acquisitions and expenditures.

Discussion:

During the course of our study and in connection with the University's review of our first draft, we learned of many worthwhile activities to increase and improve both intercampus and intracampus library cooperation and coordination (see Chapter III). However, we were advised that most were not being pursued vigorously, due to a lack of funds. We have concluded from this that their priority is relatively low compared to other activities, such as the acquisition of new library materials.

The main effect of these cooperative activities will be to reduce the need for collection duplications by providing better interlibrary services. As such, the funding of these efforts to completion presents trade-off opportunities between additional acquisitions and better use of the present collection. From the \$30 million library budget, surely more funds should be made available for the needed improvement in University coordination activities. This recommendation is directed toward both the University President and the Director of Finance.

6. We recommend:

- . That materials in microform be used to a greater extent than at present.
- . That these be used whenever the costs of so doing are less than the costs of printed material, and when the material can be used satisfactorily in microform (even if not as conveniently as in full size form).
- . That the University take whatever action it needs to allow satisfactory retrieval of microform data.
- . That additional viewing and reproducing equipment be purchased, if, after study, this proves essential to microform use, again as a trade-off with acquisition funds.

Discussion:

Economies on all campuses could be achieved by relying more heavily upon material in microform than upon material printed in conventional format. Whereas the average cost of a book is \$11.66 according to the most recent Bowker Annual, the

average microfiche package costs under \$1.00. This represents a very promising opportunity for cost reduction whenever materials are available in microform.

In their review of our first draft, University librarians raised several objections to the use of microform materials. These were directed primarily toward inconvenience, faculty resistance, unsuitability of microform for some purposes, cataloging which makes microform materials difficult to retrieve, an insufficient amount of viewing and reproducing equipment, increased processing costs and the unavailability of all materials in microform.

To quote some objections:

- microform is not the answer in many situations. It cannot be removed to the classroom or other study areas, it costs more to store, and it is not less expensive than books unless commercially routinely produced in microform, which is true of a relatively small proportion of library materials.^{36/}
- . The British Parliamentary Papers. . . would not be very useful in microform.^{37/}
- . There is good reason to raise the question of whether more campuses might not have purchased the parliamentary papers in microform. While this might prove adequate for some needs, faculty pressures undoubtedly were aligned in favor of a hard copy edition. Use of microform for this particular body of materials is also less attractive because of the complicated arrangement of items within it, and the necessary cross-reference work entailed between indexes and guides to the set, and the papers themselves.^{38/}
- . A cautionary note . . . concerning . . . the economies of microform . . . (are) . . . the associated costs of: (1) viewing and reproducing equipment, (2) staff salaries for servicing these materials; (3) space required for housing viewing equipment, (4) processing costs which tend to be higher than those required for hard copy materials. The enormous increase in purchase of

microform materials by librarians in recent years has usually resulted in collections minimally represented in the basic bibliographic resources or access points (card catalogs) known to users; therefore the collections in microform often receive far less use than either their content or price deserves.^{39/}

- (Recommendations about the economy of microform are) . . . based on incomplete information. Commercial microform, when available, does generally cost less than an equivalent printed book. In consequence UCLA spends tens of thousands of dollars each year on such material and as a policy matter prefers to buy the film in most cases. However, the use of microform is noticeably expensive when multiple use is involved, because reading machines are expensive. UCLA cannot now afford to buy enough reading machines to meet current demand. Moreover, commercial microform is not available for much heavily used material.

On the other hand--and this is fiscally significant--if the film is not already commercially available and must be custom ordered, it is not less expensive than original print. For an average book of 200 pages it costs \$12.00 to produce a useable positive film copy, plus reading machine access. It costs about \$8.00 alone to purchase a positive from an existing negative, if in fact one can be found.^{40/}

It would appear that the original alternative (which is quoted verbatim as the first paragraph of this discussion) was not read carefully by the University. It calls for heavier (not total) reliance on microform, use only when material is available in that form, and, by implication, only when economies would be achieved. Therefore, we believe that many of the University's objections do not apply.

However, the University does raise several interesting and valuable considerations, which lead us again to the conclusion that trade-offs are not being fully considered. This includes one time costs of additional viewing and reproduction equipment, to avoid future hard copy costs; the cost in inconvenience in

having materials in microform versus not having the material at all; costs of developing adequate cataloging and retrieval systems for microform vs. additional costs of purchasing and cataloging available material in printed form. A case in point is, again, the British Parliamentary Papers (Chapter III, supra) where the price difference between microform and the average cost paid for the bound edition was \$42,500.

Surely, the necessary cross indexing could have been done for considerably less than that. If the University indeed needed sets on eight campuses, (a debatable presumption) the cross indexing could have been done once, at one campus; costs then for seven microform sets would have been \$63,000 (seven times (\$9,000), plus the cost of cross indexing, instead of the \$350,000 actually paid.

In summary, it would appear that considerable savings can be achieved through increased use of microform; that faculty pressures may have to be resisted in this area; and that additional expenditures from the library acquisition budget to make microform use more convenient would be justified on a trade-off basis.

7. We recommend:

- . That these recommendations receive a high priority for additional study, evaluation and implementation.
- . That overall responsibility for their evaluation and implementation be assigned to a high-level University official, working with a steering committee if so desired.

- . That interdisciplinary task groups be established, and given the necessary time, to perform the recommended studies and to implement the accepted recommendation.
- . That due dates and schedules be fixed for these efforts.
- . That these task groups, in addition to University academic and library personnel also comprise people from outside the University system such as systems analysts, management consultants and representatives of the State Director of Finance.

Discussion:

It is our opinion that the opportunities for increased services and cost avoidance are great. They will disappear, however, unless given adequate and immediate attention. Trained people from outside the University system with different viewpoints and perspectives can add much to future planning efforts in combination with knowledgeable personnel from within the system. Task groups with assigned due dates, schedules, and, above all, time to perform the necessary evaluation and implementations are one sure way of getting the job done.

ALTERNATIVES

Alternatives for Recommendation 2

This recommendation proposes that the University give full consideration to the opportunities for economies which can be achieved by centralizing some holdings, to avoid duplicating little-used materials. One way of achieving this centralization is through the establishment of one or more research libraries, which would become centers for the support of research for the various campuses assigned to that center. In addition, the University has several highly specialized research collections (such as Oceanography at San Diego and Oenology at Davis) and also has specialized research libraries at a number of its professional schools. Some of these undoubtedly should be kept current and developed further.

Therefore, there are a number of possibilities which should be considered in the generation of alternatives. These include choices as to:

1. The number and location of (a) research library centers to be established and maintained, and (b) special research libraries to be kept current and enhanced.
2. The types of special library support needed for the professional schools, and where this support should be located.

In addition, the costs and adverse effects of each alternative generated should be considered. This includes not only the additional costs, if any, of improving the collections of the libraries selected as centers and of the special research collections. Also to be considered are

the costs of providing adequate library support to the professional schools. There would be systems development costs to improve inter-library use to a tolerable service level, and other costs more difficult to express in dollar terms, including possible loss of faculty time, affects on research grants, and performance losses due to faculty dissatisfactions, if any, etc.

The alternative we are proposing for further consideration and development, then, is just one of a number which should be generated. The evaluation of this alternative does not include all of the cost and adverse factors expressed above. We suggest that the University, possibly with outside help, will wish to generate additional alternatives and to evaluate them fully.

Alternative: Establish a fully coordinated library system within the University by creating a northern and a southern regional center for library research, centralizing the collection of new and additional research materials at these centers, and relieving all other libraries of the responsibility for collecting most research materials. This plan seems to offer the most geographical advantages because the nine campuses are arranged in two clusters--northern and southern. We tentatively estimate that such a plan would result in annual savings of between \$5.4 million and \$8.2 million. However, we have not assigned monetary values to every factor.

Description: The alternative we have selected for evaluation calls for two research centers--the existing UCB and UCLA libraries, and proposes maintenance of the Davis and Riverside agriculture collections, the San Diego oceanography collection and of present law and medical libraries.

An economy of centralization can be attained by coordinating the University library system so that (1) research collections are centralized, thereby avoiding duplication, and (2) researchers on all campuses are given access to research materials held at other campuses. This can be implemented by designating Berkeley (and the San Francisco medical library) and Los Angeles as the two regional research centers for the library system. Berkeley would serve the northern campuses, and Los Angeles would serve the southern campuses. The creation of these two regional centers for library research would relieve the libraries on the smaller campuses of the necessity of collecting research materials. Researchers at the various campuses would then acquire library materials from the regional centers which were not available on their home campuses either through interlibrary loan or personally by using the daily buses which travel between the regional centers and other campuses.

Evaluation

Selection of the two centers: The proposal for two (rather than more or less) library research centers, and the selection of UCB and UCLA for the center's locations have the following advantages over other patterns:

- a. Two centers provide the best geographic pattern, with Davis and Santa Cruz the most distant from Berkeley, and San Diego and Santa Barbara the most distant from UCLA.
- b. UCB and UCLA are already fully developed research centers and would require minimum additional collection expansion funds to serve the other campuses, as compared to other libraries in the UC system.

- c. Some of the coordinating mechanisms needed already exist; for instance, UCB and UCLA card catalogs have been reproduced and distributed to other UC campuses; and the other campuses have relied on UCB and UCLA collections to a greater extent in the past, before other UC libraries became relatively self-sufficient.

Benefits and costs: This plan would create economies by centralizing research holdings and saving the funds necessary to maintain research collections on the smaller general campuses. However, it should be noted that increased funds would be required for additional usage of interlibrary loan and intercampus bus facilities. The net savings potential of this plan can be estimated by taking the cost of providing research facilities at the libraries on the six smaller general campuses and subtracting (1) the coordination costs (increased bus and interlibrary loan facilities, including systems and procedures to provide an adequate level of service), and (2) the cost of maintaining certain specialized research collections at some of the smaller campuses.

The cost of providing research facilities at the libraries on the six smaller campuses can be estimated in two ways. Regression analysis yields a conservative estimate of \$7.6 million annually (see Chapter III). A high estimate is derived by taking the total expenditures for libraries at these six campuses (\$15 million) and subtracting the least squares figure for core collection costs (\$4.6 million). This leaves \$10.4 million for research facilities. Thus, the total cost of providing research facilities at the libraries on the six smaller general campuses is probably between \$7.6 million and \$10.4 million annually.

Interlibrary loan and busing costs are difficult to forecast. Budgetary requirements for these facilities can be assessed more accurately after a year of experience under this plan. Our trial figure should therefore be large so that these needs are not underestimated. The University might tentatively plan to spend \$1.5 million more for interlibrary loan and busing than it is currently doing.

Because of large reference needs in law and medical schools, coordination of these libraries probably cannot be as complete as coordination in other fields. The smaller campuses should therefore be allowed to retain \$100,000 for each law and medical library. In addition, \$100,000 each should be retained by Davis and Riverside to maintain their agriculture collections and by San Diego to maintain its oceanography collection. These might be maintained and enhanced because they are more extensive than comparable collections at Berkeley and Los Angeles. The annual savings produced by this plan (in 1969-70 dollars) would be, therefore:

<u>High Estimate</u>		<u>Conservative Estimate</u>
\$10,400,000	gross savings	\$7,600,000
-1,500,000	coordination costs	-1,500,000
-400,000	for law and medical libraries	-400,000
-300,000	for agriculture and oceanography	-300,000
<u>\$8,200,000</u>	net annual savings	<u>\$5,400,000</u>

If Berkeley, San Francisco, and Los Angeles were to assume regional responsibility for collection development, their acquisition budgets should be adequate to perform this function. Similarly, budgets for the other six campus libraries should reflect the fact that they are mostly responsible for maintaining core collections. The increased workload at the regional centers that would result from the adoption

of this plan could, in our opinion, be accommodated by the present (1969-70) staff, if a sufficient number of economies were introduced into the technical processing area. This would free staff to serve the additional users (See Part II of this report, Library Operations.)

Our cost estimates do not include: (1) costs associated with the maintenance of other professional schools and special research libraries in addition to those enumerated above, if this should be the University's decision; (2) hidden costs (faculty time and dissatisfactions).

Our benefit analysis does not include: (1) the consideration that this alternative would provide better research material access to University scholars than they presently have; (2) considerations that the alternative would provide this access even if State support to University library collection activities were reduced to very low levels; and (3) the probability that the plan is feasible, while the University's present collection expansion plan probably is not, given present and anticipated financial conditions.

Alternatives for Recommendation 3

Recommendation 3 calls attention to uncertainties about the need for additional Ph.D.'s and in the level of Federal and other financing of research. It urges the establishment of modest library acquisition goals, with the recognition that a very large proportion of current and planned library acquisition is to provide expanded research capabilities for the faculty and for doctoral candidates.

One way in which relatively modest goals may be established, giving recognition to the factors enumerated above, is through a curtailment

of the acquisition of retrospective materials. This alternative should also be considered by the University in Recommendation 1, the establishment of weighted library acquisition objectives; and as helping achieve Recommendation 2, through the encouragement of more reliance on centralizing the holding of research materials.

Alternative: Allow the smaller campuses to continue collecting current materials at the present rate (within budgetary and priority constraints), but eliminate the acquisition of retrospective materials at these campuses. We estimate that the University will achieve a minimum savings of \$2 million annually in cost reduction by implementing this recommendation.

Description: Purchasing only current materials would keep cost down and research collections current, but would not fill gaps, if any, in the special or general research collections of the smaller campuses. Thus, reliance on the two large research libraries, UCB and UCLA, would remain about the same as now. Staffing of the smaller libraries would probably decrease, particularly if economies could be produced through improved systems (see Part II of this report, Library Operations.) Over the years, full research capability would be reached at the smaller campuses when enough time had elapsed to make today's current material retrospective.

The ban on the purchase of retrospective materials should be modified under careful controls to allow some purchase of core material that was lost, damaged or destroyed, or where additional multiple copies were needed because of an increased number of students. This would cost a small but unestimated amount. Lost or damaged research material would not be replaced.

Evaluation: There are no University figures kept on annual expenditures for retrospective items. However, the internal breakdowns that the libraries make of their budgets indicate that the six smaller general campuses spend approximately \$2 million annually for purchasing and binding retrospective materials. The amount of retrospective material that would be authorized for core collection replacement or the provision of additional multiple copies is so small, in relation to the \$2 million estimate, that these costs may be ignored.

The alternative would be only moderately successful in increasing the interdependence of the UC libraries and would not, in our opinion, meet all needs for a modest acquisition program. However, it would be relatively easy to implement and control and should, we believe, be a valid part of any new acquisition criteria adopted by the University.

Conclusion

This report section concludes Part 1, The Development of Library Collections, of our report on THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA. Much remains to be done by the University, to evaluate and accept, amend or reject our recommendations, and to carry those accepted or modified to final conclusion. We appreciate the courtesy extended to us by the University and would be pleased to work with them in any way possible in the completion of the tasks remaining to be done.

THE LIBRARY SYSTEM OF THE UNIVERSITY OF CALIFORNIA

METHODOLOGICAL APPENDIX

The data analyzed consists of annual measurements of each variable for each general campus during the nine year period 1961-62 - 1969-70. San Francisco was excluded because its concentration in the health sciences makes it unique within the UC system. A typical annual observation, then, consists of enrollment, faculty size, number of graduate programs offered, and expenditures for libraries on one of the general campuses. San Diego observations start with 1964-65; Irvine and Santa Cruz observations start with 1965-66.

Sources of data are University and campus records. Library expenditures are taken from the BD 110's and converted into 1969-70 dollars (based on the Consumer Price Index). All readers would probably agree that the use of some kind of transformation to account for inflation is desirable. The question then becomes one of deciding upon a factor with which to adjust actual expenditures. In most discussions, inflation is said to exist when a higher level of expenditure than was necessary at a previous time is required to obtain a certain combination of goods and services, or when $X_t = Q$ and $X_{t+1} + \lambda = Q$, where X is a specified sum of money, Q is a certain combination of goods and services, t is a period of time, $t+1$ is one time period later, and λ is positive.

This formulation assumes that increases in earning power are commensurate with price increases. This may not always be the case, however. When it is not, the entire definition of inflation must be altered. Assuming, for example, that library costs go up 10 percent annually, library

budgets increase 12 percent annually, and average income increases 5 percent annually, the above formulation will not adequately account for inflation. According to the above definition, inflation would be estimated at 10 percent a year. However, insofar as an average taxpayer would be concerned, any increase above 5 percent constitutes a real increase since a greater portion of his income would be allocated for library support, once the 5 percent level is crossed. Using a figure greater than 5 percent would therefore confound inflation with an actual reallocation of resources.

Alternatively, inflation could be defined as existing when the labor devoted to the support of a specified function remains constant from one period to the next despite increases in the level of funding for that function, or when $L_t = Y$ and $L_{t+1} = Y + \lambda$, where L is a specified amount of labor allocated to the support of a function (food costs, rent, libraries, etc.), Y is the cost of that function, t is a period of time, $t+1$ is one time period later, and λ is positive.

In this case, we find the latter definition preferable since it facilitates holding resource allocation constant although it does not control for the level of service. Unfortunately, we see no way to do both. Accordingly, we have used the Consumer Price Index to account for inflation because it comes closest to measuring inflation for the State's economy as a whole.

In addition, it should be mentioned that constructing an inflationary index for library costs would be a major research project in itself, since there are so many cost categories to consider.

Student enrollment and faculty size were taken from the Statistical Summary of Staff and Students. Enrollment is the total unweighted FTE count for each campus. Faculty includes FTE professors, associate professors, and assistant professors. The number of graduate programs offered during each year were derived from information obtained from each campus' graduate school.

The model contains two propositions: (1) faculty size is a function of the size of student enrollment and of the number of graduate programs offered, and (2) library expenditures are a function of faculty size and of the size of student enrollment. The results of the regression indicate that faculty size is almost completely explained by enrollment and graduate program levels. This closely parallels intuitive conceptions of what constitutes faculty workload. Enrollment and size of the graduate program explain 98 percent of the variance in faculty size ($R^2 = .98$). The remaining variance is probably explained by the number of departments that do not offer graduate programs, and varying faculty-student ratios from department to department and campus to campus. Including the number of undergraduate majors might have helped to explain faculty size better but it was omitted because it would probably not help to explain total expenditures assuming that expenditures relating to the core collection were mainly influenced by enrollment. This would seem to be the case since enrollment would govern the number of multiple copies needed as well as the size of the reference-circulation staff.

To estimate expenditures for core collection facilities and research facilities, we found it useful to postulate that enrollment would influence expenditures related to the core collections, i.e. the more

students enrolled, the more course-related material needed; and that faculty size would influence expenditures related to the research collection, i.e., the larger the faculty, the more research material needed. Therefore, the model hypothesizes that library expenditures are a function of the size of enrollment and the size of the faculty.

Enrollment, then, affects library expenditures in two ways. First, it has a direct effect on expenditures by creating a demand for core collection facilities. Secondly, it has an indirect effect by influencing faculty size which, in turn, has a direct impact upon expenditures. Together, these two variables explain 93 percent of the variance in library expenditures ($R^2 = .93$).

Originally, it was thought that the number of graduate programs would have a direct impact upon library expenditures. This does not appear to be the case, however. A possible explanation might be that faculty research needs are at least as great (and usually greater) than the needs of graduate students. Therefore, once the library has stocked itself with materials for the faculty to use in its research, graduate student research may not require many additional resources. Thus, the only effect size of the graduate program has on library expenditures is indirect, through its influence on faculty size.

Since the main purpose of this analysis is to estimate the cost of library research facilities, one might reasonably ask (1) why didn't we regress library expenditures on faculty size alone, and (2) how does the addition of the enrollment variable affect the coefficient for faculty size?

It would have indeed been reasonable to regress library expenditures on faculty size alone in order to obtain an estimate of allocations for research facilities. This would have given us a coefficient of \$3,946 instead of \$3,123. The more complex model is presented in the report, however, because we wanted to convey a broader picture of variable interaction and the ways in which these factors influence library expenditures. Also, this model gives us a more conservative estimate of the costs of research facilities, and we wanted to be on the safe side. If we had used the \$3,946 parameter, our estimate of the annual cost of research facilities on the six smaller general campuses would have been \$9.6 million instead of \$7.6 million.

Needless to say, since the data are obviously a population rather than a sample, we did not conduct significance tests. We are interested only in the parameters effective under the 1961-62 - 1970-71 growth plan. Our population is, therefore, defined as all years during this period for which data are available.

The model presented here appears to fit the data quite well. Besides the very high R^2 's, the residuals are not skewed, implying that the estimates are not biased. The model overestimated expenditures about as many times as it underestimated them--32 overestimations to 29 underestimations; and for the six developing campuses the breakdown was even closer--21 overestimations to 22 underestimations. If there is any tendency in the parameters though, it is that they provide conservative estimates of expenditures for the last four years of the study. Indeed, for the first five years of the study the model overestimates expenditures 25 times, and underestimates them 4 times. For

the last four years of the study, however, the model underestimated expenditures 25 times, while overestimating them only 7 times. And for 1969-70, the model underestimated expenditures for all eight campuses.*

This suggests that the parameters increased starting in 1966-67 from what they were previously. Before then, expenditures were probably less than \$500,692 for the base operating cost, \$37 per enrolled student, and \$3,123 per faculty member. Beginning with that year, however, expenditures appear to have been consistently above those levels.

Consequently, the \$7.6 million estimate of the cost of providing library research facilities on the six developing campuses during 1969-70 is a conservative one. Similarly, the \$4.6 million estimate of expenditures for core collection facilities is also conservative. Therefore, the \$10.4 million estimate of the cost of research facilities (obtained by subtracting \$4.6 million, the core collection expenses, from \$15.0 million, total expenses) overestimates actual expenditures.

*This is not to imply that the data are curvilinear. Clearly, they are not. The tendency to underestimate actual expenditures increases over time, not as enrollment and faculty size increase. It is perhaps worth reiterating that in relation to the independent variables, the residuals are not skewed.

FOOTNOTES

1. Letter from John H. Stanford (October 19, 1971).
2. J. Rosenthal, "Comments on the report prepared by Burt R. Cohen; Libraries--Collection Development; September 1971". Memorandum to Vice President John Stanford, (Berkeley: October 8, 1971). p. 1
3. See, for example, "Campus Research: a Giant in Trouble", U.S. News and World Report (December 20, 1971). pp. 33-37
4. Associated Press, "UC Official Sees No Ph.D. Expansion Need", Sacramento Bee (December 1, 1971).
5. Earl F. Chiet. Lecture delivered to the 1971 Executive Program. (University of California, Berkeley: October 14, 1971). Dr. Chiet was Director of a 1971 study of the finance problems in higher education for the Carnegie Commission and the Ford Foundation, and was the Executive Vice Chancellor, University of California, Berkeley, from 1965 to 1969.
6. Unsigned memorandum to John H. Stanford, October 19, 1971. P. 4. Mr. Stanford was Acting Vice President, Business and Finance, of the University at that time.
7. Comments on the preliminary version of this report from the University of California, (Los Angeles: Office of the Librarian, October 6, 1971). P. 1

8. Unsigned memorandum op cit. p. 1
9. Ibid.
10. Charles J. Courey, "Library Goals for Size of Collections."
Report to Vice President Taylor. (Berkeley: May 29, 1968) p. 2
11. Chiet, op cit.
12. Unsigned memorandum, op cit. p. 1
13. University of California 1972-73 Budget Request for Libraries. p. 2
14. Rutherford D. Rogers, "University Libraries in the 1970's Some Predictions." University of Rochester Library Bulletin XXVI, no. 4, p. 300.
16. V. W. Clapp and R. T. Jordan, "Quantitative Criteria for Adequacy of Academic Library Collections," College and Research Libraries, September 1965, pp. 371-372. For a more recent version see Interinstitutional Committee of Business Officers, A Model Budget Analysis System for Program 05 Libraries. Office of Interinstitutional Business Studies, Evergreen State College, Olympia Washington. No date of publication.
17. Melvin J. Voigt and Joseph H. Treyz, Books for College Libraries. (Chicago: American Library Association, 1967).
18. Rosenthal, op cit. p. 2
19. Ibid.

20. Gordon R. Williams, "Physical Access to Library Materials." Newsletter of the American Council of Learned Societies, XXII, no. 1 (January, 1971), p. 16
21. Rosenthal, op cit. p. 1
22. Ibid. p. 4
23. Douglas W. Bryant, "Problems of Research Libraries." Newsletter of the American Council of Learned Societies, XXII, no. 1 (January 1971), p. 6
24. Rogers, op cit.
25. Booz, Allen and Hamilton, Inc. Problems in University Library Management. (Washington: Association of Research Libraries, 1970) p. 8
26. Unsigned memorandum, op cit. p. 2
27. Ibid. p. 3
28. Rosenthal, op cit. p. 1
29. "Library Anticipations of 1980" (Irvine: Office of the Librarian, March 4, 1971, Revised). p. 9
30. Unsigned memorandum, op cit. p. 2
31. Rosenthal, op cit. p. 4
32. Comments on the preliminary version of this report from the Office of the Librarian, Los Angeles, op cit. p. 3

33. Rosenthal, op cit. pp. 1-2
34. Unsigned memorandum, op cit. p. 2
35. Ibid. p. 3
36. Ibid. p. 3
37. Ibid. p. 2
38. Rosenthal, op cit. p. 3
39. Ibid. p. 4
40. Comments from Office of the Librarian, Los Angeles, op cit. p. 1

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