A PROTOTYPE BRANCH LIBRARY OF THE FUTURE

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ABSTRACT: “The Development of a Technology Based Prototype for the Branch Library of the Future.” This was the mission statement for MASIC, the Marine and Atmospheric Sciences Information Center, as described by the Director and Dean of Libraries at a presentation to the faculty of the Marine Sciences Research Center at the State University of New York at Stony Brook on July 21, 1992.

This paper deals with a department’s realization that it must upgrade its facilities, specifically its Reference Room, as rapidly as possible, even at the expense of relinquishing control over the facility. The transition from a part time to a full time branch of the campus library system is interesting, challenging, difficult, and ongoing. It deals with philosophy of operation, design, tradition, technology, collection development, and a host of other problems that can be imagined on a campus that has seen its budget severely pared, a major journal cancellation program, and vacancies in key leadership positions. Inevitably, there were and are conflicts between the traditional concepts of library services and methods of delivery, especially when the new facility has funding for technology that the existing system has been seeking for some time. The current status of MASIC, its technology, communications, databases, is also discussed.

On July 21, 1992, the faculty of the Marine Sciences Research Center at the State University of New York at Stony Brook, was informed of the “development of a technology based prototype branch library of the future” to be established at the Center in lieu of the then existing Reference Room. The branch was scheduled to open for the Spring, 1993 semester. This facility was to be called the Marine & Atmospheric Sciences Information Center. It is now commonly known by its acronym, MASIC, and it is the model for this paper.

This announcement was greeted with expressions of pleasure and possibly a hint of skepticism by the faculty present. An improved facility was something long sought. What the long term outcome of this announcement will be is as uncertain as the direction of libraries of the future.
Permit me to relate to you some background about the University at Stony Brook, the Marine Sciences Research Center, and for the Library itself.

The Institution, the Library and MASIC

The University at Stony Brook

The University has been at its current site for almost thirty years. It is the only research university on Long Island, an area with a population of seven million. Today, total enrollment stands at 17,617 students, an increase of just over 24% for the past twenty years (Figure 1). The state financial plan budget for the fiscal year ending last June 30 was $177.7 million. This figure does not include research funds. A request for the state budget for the last twenty years yielded the few figures shown below (Figure 2). The 1984 library budget was $4,635,091. The budget for the year ending June, 1994 was $8,611,341, an increase of approximately 86% in ten years (Figure 3). The relative changes are shown in Figure 4.

The Association of Research Libraries (1994) annually reports on annual library expenditures as a percentage of University E & G (Educational & General) expenditures. For most of the last ten years, the Stony Brook level has been below 3.0%. In contrast, the ARL reported highs and lows for 1992/93 were 6.3% and 1.7% respectively.

The recent Middle States Report reaccreditation statement, when viewed in light of both the Library and University budget resources, makes one wonder how any of the strides of MASIC ever occurred. The report, prepared by the campus, states in part:

"... The largest problem, and most persistent theme, of the Stony Brook library over the last twenty years has been inadequate funding. There continues to be an urgent need to increase funding for acquisitions to sustain current research and teaching activities."(Steering Committee 1994)

Despite the bleak statement above, we are here today to look at what is intended to be the prototype of the branch library of the future. In this austere setting, a convergence of factors, both tangible and intangible, brought about an opportunity that is rarely replicated and we hope, will not be dissipated. This opportunity is embodied in MASIC.

The Library

Until last year, Stony Brook’s library system in 1974 consisted of the Frank Melville Jr. Memorial (Main) Library and six science branches. The total acquisitions budget for 1993 was $3,395,458. Last year, the serials subscriptions, due to the stagnant budget and the well documented inflation were cut by approximately 30% or $575,000. Over recent history, the access and acquisitions budget has seen the dollars shift towards greater serials and access expenditures, forcing a relative diminution of monograph purchases (Figure 5). The increase in expenditures for science serials until 1992 is demonstrated in Figure 6. Where the current level stands with respect to inflation is questionable. Until
a few years ago, the library was budgeted from state funds which included a level of adjustments for inflation. Today, acquisitions are funded with research dollars which do not include inflation adjustments. Figure 7 is an attempt to use the ACTS study to apply journal price increases determined in the study to Stony Brook expenditures. (Carpenter 1994) Because of the lack of complete acquisition figures, this plot is open to interpretation and correction.

Professional and clerical staffs have remained fairly stable over the years, although there is a slight downward trend in the number of librarians. There are 41 (tie) librarians today. In June, 1993, the Library had holdings of 1.6 million bound volumes and 3.2 million microforms. Counts were not readily available for other formats including film, video, recordings and music.

Library Automation

The major library automation at Stony Brook today is STARS, the local implementation of the NOTIS system. Through the addition of MDAS (Multiple Database Access System), users also have access to Dissertation Abstracts, Periodical Abstracts, and the catalogs of the SUNY centers at Binghamton and Buffalo. The acquisitions and serials modules have also been implemented. The main reference room has several CD-ROM databases available attached to stand-alone systems in addition to a collection of additional CD’s made available through the Federal Depository Program. These items are mounted on a work station upon request.

MSRC

The primary constituency for the Marine & Atmospheric Sciences Information Center is the multi-discipline Marine Sciences Research Center at Stony Brook (MSRC). The Center is twenty-six years old and today has a faculty of fifty-one and a graduate student population of 150. It offers a Masters Degree in Marine Environmental Studies and a Doctorate in Coastal Oceanography. Major components of the center include the Institute for Terrestrial and Planetary Atmospheres, the Waste Management Institute, the Living Marine Resource Institute, the Institute for Urban Ports and Harbors, and the Coastal Ocean Action Strategies Institute. In addition, there is an expanding program of undergraduate instruction in the marine sciences.

MSRC, since its inception, has been heavily involved in environmental concerns on a local, national and international level. Physical proof of this can be seen in a visit to the MSRC complex. In 1990 an experimental boat house was built using cinder blocks made out of ash from municipal incinerators. Earlier this year, new sod was planted in front of the boat house and the building housing MASIC. It was grown by a local sod farmer working with Dr. Vincent Breslin of MSRC. The compost used in growing the sod ranged from 10 to 30% incinerator ash.

The Birth of MASIC

MSRC had maintained a “Reference Room” for use only by MSRC faculty and students which had been maintained by a secretary/clerk on a “when time was available” basis. The Room housed a collection of journals primarily donated by faculty and purchased with limited funds by the Center. The
monograph collection was small, amassed from donations and by absorbing collections from centers that had closed over the years. Technology was practically nonexistent. The faculty and staff relied heavily on use of the other science branches on the campus.

The success of the programs and the continued growth of the Center brought pressure to bear for a facility that would better support the broadening range of research activities. In 1991, a part-time librarian was hired to improve the situation. However, pressures continued to build significantly due to anticipated increases in faculty and students and greater demands upon a finite amount of space for offices, labs, meeting rooms and classrooms. Potential faculty exerted pressure to improve the facility significantly or they would not come to MSRC.

These pressures culminated in a final round of negotiations involving the University Provost, The Dean and Director of Libraries, and The Dean and Director of the Marine Sciences Research Center. The results were a compromise that will ultimately, if not already, benefit the University as a whole. The Provost contributed necessary startup funding to improve the facility. The Marine Sciences Research Center gave up its “Reference Room” and donated some valuable space to the library. The Library, not convinced of the need for a new branch and concerned with the establishment of an independent library that may not be up to its standards, acceded to the reality of a new facility under its control.

In July, 1992, Dr. J.R. Schubel, Dean of MSRC introduced Library Dean and Director John Brewster Smith to the faculty. At that meeting, Dr. Smith announced the establishment of MASIC and its very optimistic start date of February, 1993.

Here, ladies and gentlemen, was the first demonstration of the campus’s ability - or shall we call it desire - to deal with the library of the future.

- Item one - both the library administration and the MSRC faculty had to approve the design of the new space. With one minor change, that happened within one month.
- Item two - the existing collection at MSRC had to be cataloged in the campus STARS system. The commitment was made to begin the effort as soon as materials could be delivered.
- Item three - campus facilities delivered construction estimates within two weeks of receipt of plans. They also agreed to the narrow window for demolition and construction.
- Item four - the purchase department expedited the generation of specifications for all items that had to be acquired through the bidding process and expedited all other orders.

What is unique here is that people from all over the campus wanted to participate in the this exciting endeavor and did their best to move this project along in record time.

The guidelines for the new branch were minimal. The new facility would adhere to the general operating rules of the campus library system. (The sense was that this new facility would look like and operate as a traditional branch.) Subscriptions at MSRC would be reviewed with respect to those already existing on the campus. Duplicates would be eliminated. Some journals were transferred from other branches to support ongoing changes in faculty specialties. Many journals common to the marine sciences and held in other branches would not be transferred, much to the disappointment of MSRC faculty. The library system would absorb the subscription budget of MSRC and add funds for mono-
graphs. The space itself would house shelving for a minimum of 15,000 volumes and be equipped to support the NOTIS system for public access and the circulation system.

The MSRC requirements were for a modern, quiet facility, designed for expansion when required, with the latest technology available to support research and studies in the marine and atmospheric sciences, and, above all, a comfortable journal reading room - with windows. Today, two walls of the journal room are glass to afford pleasant views the year round. In addition, MASIC would be expected to support emerging technologies, such as multimedia courseware and other non-traditional library services. The expansion capability was planned to support both normal growth and anticipated activity in geographic information systems.

The literature today relating to the “library of the future” or the “virtual library” or any of the many terms with which we are familiar espouses technology in one form or another. But there is a body of support for couching the implementation of library technology in some familiar setting. Billings uses the term “Bionic Library”, referring to the electronically enhanced traditional “organism” which incorporates new concepts and technologies into libraries but does not leave the traditional concept of a familiar and comfortable home. While all MSRC faculty and students have offices within a few hundred yards of MASIC, they utilize the facility quite frequently. There were 3,650 visits last month. Since becoming a branch of the library system, the former reference room has witnessed significant use by both local and regional residents. One recent interesting visit to the facility was by consultants researching the feasibility of establishing multi-level fish farms in our local waters. The benefit, or comfort, of this environment can not, in this writer’s view, be found in a “library without walls” or a “virtual library.”

The equipping of MASIC, including furniture and fixtures and technology, was dictated by the size of the allocation from the Provost less the cost of rehabilitating both old and new locations, relocating labs and other equipment. In fact, the entire project ran $11,000 over budget due to unanticipated electrical code violations found during the course of renovations.

MASIC Technology

From a technology perspective, MASIC slowly evolved (Figure 8). After the new facility was ready for occupancy:

- The wiring closet was upgraded. 10BaseT lines were pulled into MASIC and were terminated with thin-wire converters.
- Five public work stations - four DEC IBM compatible systems and one MAC - were set up. All stations now had access to STARS via telnet.
- A second ASFA disk was acquired, increasing the coverage back to 1978.
- Georef was acquired.
- A Novell server was installed. The CDs were put on the network using Optinet software from Online Systems.
- LILRC, the Long Island Library Resource Council Union List of Serials, was added.
- HP4M printers were placed on the network - available to the public stations.
The students and faculty had more resources available to them than ever before. To some, it was
overwhelming. Commonly asked questions included:

- Why doesn’t the citation print when I hit the print button? Because I can’t rig it to print
  until you quit Silver Platter.
- Why only 25 items? Because I set it up that way and I will be changing it to ten items.
  Downloading will give you all that you desire.
- Do you have a disk?
- Why do the menus keep changing?

Last Spring saw the delivery of additional CD-ROM databases to MASIC. A revised menu this
summer announced their arrival. In addition to the above items, the MASIC constituency can now
access:

- Arctic and Antarctic Regions
- ERIC
- Oceanographic and Marine Abstracts, volumes I and II
- Water Resources Abstracts, volumes I and II
- Books in Print Plus and Ulrich’s International Periodicals Directory are permanently
  mounted, although librarian assistance is required to utilize them.
- Current Contents for the Agricultural, Biological and Life Sciences is available on only one
  of the public work stations due to licensing restrictions. Changes to this arrangement are
  under consideration. The major drawback at the present time is the structure and scope of ISI
  pricing.

Several other CD-ROMs are available at MASIC. These were acquired either as donations or as part of
the Federal Depository Program. Included are:

- USGS Digital Chart of the World
- Plate Tectonics
- AMS (American Meteorological Society) Conference Preprints for 1993
- 7.5 minute quadrangle charts of various parts of the United States.

These last two items are the basis for discussion in several areas. The AMS CD-ROM contains full text
of papers presented at all of the AMS conferences and symposia. The indexing presents problems for
the occasional user but supposedly is under revision for future versions. The major difficulty with it is
that the text is in image format. Maneuvering around the pages, zooming in and out, in essence -
testing your mouse skills, detracts from the user’s primary purpose of reviewing the content. Text based
files would be much easier to use, although the capacity of a single disk might be exceeded.

With respect to the federal approach of generating chart releases on CD, there are other factors to
consider. There is no standard today for viewing software. The VPF approach, on many occasions,
generates dark screens. Many libraries do not have the modern equipment required to support Idrisi or
ArcInfo software and display the images properly. In fact, few, if any of the student computer labs on
the Stony Brook campus could run this software. A similar situation occurs on occasion when patrons
wish to download one or more models from an EPA CD-ROM. The files are larger than can be accommodated on a typical 3.5 inch floppy disk. The only sensible approach is to make the material available via FTP transfer. This assumes that both the library and the patron have access to these resources at the same time. It does elevate the level of frustration.

The same can be said of magnetic media that now accompany many new publications. A student approached me a few weeks ago with a MAC disk that accompanied a text for an Organic Chemistry course. The student complained that none of the computers in the computer labs had the necessary disk space or the available memory to load the program. He turned to the library for assistance. Unfortunately, the floppy disk drive on the public station failed partially through the install process. This just added to his level of frustration. We cannot afford to offer computer services to our constituencies on a regular basis. But we should be able to point them towards campus based facilities that can. We must lobby, cajole, entice, demand, or perform any other reasonable activity that will allow our patrons to accomplish their goals.

Main Library Advances

While all this talk is taking place about MASIC, we must remember that this is simply a branch library. We should also look at what had been taking place at the Main Library. Considerable effort was being expended in three critical areas. A major journal reduction campaign has taken place which ultimately resulted in a reduction of $600,000 in serials subscriptions - a devastating act that has been faced by many libraries in recent years. There is a bright side, however. Now, we are forced to examine how we deliver services and reorder our priorities. In this instance, access vs. acquisition is under continuous study.

At the same time, the Library was scrutinizing the existing and future technology to be employed in sustaining at least a baseline service level to our patrons while instituting controls on long term costs. We must be careful of our language here because long term, especially with regard to technology, generally covers time frames in months - not years.

The decision was made to pursue client-server systems for the future because of the costs associated with today's mainframe computers. Ameritech's recent decision to restructure itself and abandon the "Horizon" system in favor of "Marquis" - a currently inadequate system for academic libraries - has complicated the issue.

But there is also optimism - and more work - to be found here. These interruptions to in-place strategic plans have caused or will bring about the inclusion of additional items. Among them are closer scrutiny of current and planned vendor offerings; tighter financial examinations of the vendors themselves; insistence upon multiple platform support; the inclusion of enforceable penalty clauses for nonperformance; and further consideration of consortia operations for greater bargaining power. Libraries are not like private business in that they are not committed to bottom line performance. But, as the key departments are vital to the success of a business, so too, are libraries critical to the success of their parents - they deliver the resources and services that are critical to quality research efforts and the education of our future.
Back at MASIC

Meanwhile, the realities of a branch library supporting high levels of scholarship and research in a technology based environment continue to become more complex. Upgrading public stations can be accomplished on an individual basis without reducing access to any great degree. However, network server hardware or software upgrades require blocks of time that are difficult to find when your normal service schedule covers over eighty hours, seven days a week. The purpose of a prototype is to accomplish something new - even if it is to identify new problem areas. The aforementioned tasks will be accomplished as rapidly as possible.

New Library Services

In the last several years, there have been many conferences held at the MSRC facility involving environmental concerns. These have included the attraction and development of environmentally safe industries to replace those lost in the region due to the economic problems of the 80s and the decline or demise of defence related industry in the region. Last year, a "war room" was developed. Now known as the Interactive Environmental and Analysis Laboratory, or IDEAL, this problem-solving/conference/discussion/planning/decision making facility is equipped with twelve networked computers with monitors and keyboards recessed in the table top. Led by a facilitator, the system supports the interchange of ideas and stimulates frank discussion. Thoughts and viewpoints can be entered anonymously for display on a screen in front of the room. Secret ballots can be taken. Documents generated. Inhibitions lost. Consensus reached on points with opposing views. Since last December, approximately seventy conferences have utilized this facility. This is part of MASIC. Through the MASIC network, this facility can operate successfully and help provide substance and meaning to gatherings of leaders with differing opinions. The resources of the library system and the University are available to them. The MASIC network also provides access to the Internet when required. Many of the attendees have been introduced to the Internet through MOSAIC at these meetings.

Last Fall and Spring, this same facility was used support the Undergraduate Initiative. This effort was an attempt to codify and prioritize the many areas of campus life that urgently needed establishment or enhancement. Through many sessions and much discussion, campus leaders were able to set a list of the most urgent priorities that could be implemented with available funds. While not every constituency was satisfied with the outcome, it was successful to the extent that a formal list was presented to the Acting Provost for his review and approval. Is this non-traditional activity part of the library of the future? In my opinion, it is.

The Short Term Future at MASIC

The next few months will bring changes to the existing, the old, and the new to make our resources available to more people. Our server will be upgraded to support more applications. One of these will be the addition of five stations to support the interlibrary loan record keeping. In conjunction with the installation of Ariel for document delivery, this additional service should cut the clerical effort substantially and lead toward better turnaround times for incoming and outgoing requests. While no firm schedule has been developed yet, we know that its rapid installation is imperative for cost effective service to our clients.
Also under consideration for early implementation is the availability of Gopher and Mosaic on the public work stations. There are some concerns because of the potential for greatly increased times in front of the terminals. Observations of a visiting scientist this past summer yielded findings of sessions lasting over one hour each occurring twice a day for at least four days per week. These were generally Gopher sessions involving EPA and related databases. These sessions were not restricted due to a lower utilization of the work stations during the summer months. A half hour limit will be imposed if warranted.

A local database - a comprehensive bibliography of regional groundwater literature - is being compiled by faculty from Earth & Space Sciences. When completed, it will be mounted locally for use by the campus. Similar activities are being contemplated.

One of the near term goals is to expand local use of the existing wiring within the MSRC facilities to include greater remote use of MASIC resources. Several faculty members have already asked about accessing the networked CD-ROMs from their offices, labs, and homes. This can be accomplished under existing licenses with no cost. It will require modifications to some software but is well within reach, possibly by the beginning of next semester.

Last month was one of mixed emotions at MSRC. Professor J. Laurie McHugh vacated his office, left Long Island and moved to Virginia. Upon his official retirement, Professor McHugh donated his personal library to the center. This collection covers over thirty years worth of study and research primarily on whales and clams. Initial estimates indicate that there are between three and five thousand items to be individually reviewed and cataloged. When completed, the MASIC collection will be substantially enriched. Depending upon further research and funding, it is possible that parts of this collection would be candidates for scanning, indexing and mounting on the network.

Longer Term Goals

As mentioned above with respect to the McHugh collection, the building of local full text databases is worthy of pursuit. Why? The building of these local files would make the quality and content of the work available to others pursuing related scholarly efforts. There are many obstacles to this effort. One is funding. The second is acquiring the experience to deal with the intricacies of mixed text and image environments, standardized markup language, and the emerging unicode. The scope of effort here is considerable. The potential candidates for initial conversion would be the masters' and doctoral theses and dissertations. Universities could request approval to publish these scholarly efforts locally as part of the degree granting process without unduly infringing upon commercial interests. The same cannot be said for faculty who currently must meet publishing requirements for tenure.

In conjunction with MSRC, MASIC should be in a position to support other reasonable objectives. These include, among others, the support of GIS (Geographical Information Systems) systems, and archiving and access to multimedia courseware and lecture presentations. All of these require substantial storage, computing power, and communications bandwidth. For financially stressed libraries, this presents an unduly large burden that can only be remedied by university-wide and / or departmental support on a continuing basis. Not only must we learn how to deal with different types of
media in one package, we must learn how to catalog it completely, how to preserve it, and have appropriate facilities available to use it. We are facing high startup costs in an area where there are no defined standards to protect our technology investment for a few years.

With respect to bandwidth, we are more fortunate. On the Stony Brook campus, we have access to ATM bandwidth at certain locations. We know that full motion video and sound plays a critical roll in certain applications such as distance learning and remote medical diagnostic procedures. But is it warranted for any potential library operations? At Stony Brook and MASIC, with our current economic situation, it is not. It would be much more to our advantage to pull fiber to all the residence halls prior to upgrading selected parts of the campus. Reality, both real and virtual, envisions no significant increase in funding to accomplish both in the near future.

The Future

What does the future hold for libraries in general? With all candor, we can count on uncertainty. We started with MASIC as a model. Let us look at MASIC’s near term future. Certain items of accomplishment have been mentioned and planned changes have been listed. One item that has been undertaken and still in progress is the satisfactory installation of X window software that would permit enhanced connectivity options and multiple database accesses simultaneously. This multi-processing capability is not new or unique. Rather, it is a variation of the Scholar’s work station concept that has been described in the literature. Is it worth the effort? Look at the services provided by librarians over the many years, apply the current technology, and make your own decision. Here are a few possible scenarios.

A librarian is looking at the daily activity on the IAMSLIC LISTSERV. She or he reads a message from a fellow librarian trying to locate a rare paper for a patron. She switches to the catalog window and does a search. Success. Back to window one or another window and sends a message that the item is available and will be transmitted immediately. A patron has access very rapidly to the material in question and two librarians working in the same virtual library - with branches separated only by continents or oceans - have handled another typical request in a day’s work.

A second scenario has a student sitting at a work station in MASIC browsing the world with Mosaic. She finds something of interest that will help her complete an assignment due on Tuesday. She checks the citation against the STARS system at Stony Brook. The item is not there. She opens a third window, enters her identification number and pastes the citation into the Interlibrary Loan window. The ILL office has a legible, accurate citation to search. OCLC or RLIN can be searched and the request sent within minutes.

A third person wishes to look at a USGS chart of a particular part of Long Island with emphasis on rain water runoff in farming areas. The New York State version of the federal 7.5” chart has these features added. The processing power can be provided by one of the library computers or by a local Sun work station where she has an account. Access is available when the student requires it - traditional library service cloaked in the technology.
This is the goal. Give the patron all the tools needed to support his or her research effort and provide the technical capability to acquire the requested material as rapidly as possible. MASIC, the other science branches, and the Melville Library are switching to Ariel and other technology based services to assist in this effort.

Because of limited allocations for monograph and serials acquisitions (including CD-ROM subscriptions), MASIC will be seeking free or low cost acquisitions in electronic format. One of the least costly parts of a network today is data storage. By taking advantage of this falling cost per megabyte of storage, we will be in a position to add disk arrays to house electronic versions of publications to augment the list of library resources, provided that this activity does not violate copyright laws. A few examples include: Analytical Review of the Library of the Future; International Profiles on Marine Scientific Research; and the Leuckart Poster Collection from Woods Hole (Drabenzott, Fenwick, Leuckart).

For MASIC, there is another level of uncertainty about the future. Over the past eighteen months, there had been, are, or will be vacancies in key positions - University President, University Provost, Dean and Director of MSRC, and Dean and Director of Libraries. Dr. Kenny assumed the office of President last month. Her statements indicate that she will be stressing research and improvement in the Undergraduate Program. She must come to terms with the many problems on the campus, including forming search committees for the three vacancies mentioned earlier and a substantial budget deficit.

Summary

In summary, our future in the virtual library lies in the comfort of familiar environments that are augmented by technology and communications guised in various forms, supported by judicious use of available funding. Additional funding for MASIC and the library system will have to come from outside sources, several of which are already in the works. However, we do have our greatest resource to count on for the future. And that resource is the dedicated corps of librarians at Stony Brook. Since libraries today are virtual, that corps also includes you.

REFERENCES


Available Financial Plan Data in $ 000s

- Financial Plan

Fig. 2
Melville Library Budget - 1980 -1995

1995 Budget has not been confirmed to date
Library Budget Changes 1982 -
Serials - Actual - Gen. Index - Sci Index

![Graph showing Serials-Actual-Gen. Index-Sci Index](image)
Electronic Format:

Sample image from the Leuckart Poster series scanned by Woods Hole