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ABSTRACT

The theme of the 1991 Asian/Pacific American Librarians Association (APALA) was "Changing Dimensions: Managing Library Information Services for the 1990s and Beyond." Members and speakers were invited to discuss this topic from all dimensions of library and information related fields. Presenters had the options either to write on actual issues or to conceptualize a futuristic phenomenon that will affect the management of library and information services. The following papers are included in this proceedings: "The Changing Dimensions: Managing Library and Information Services for the 1990s" (W. David Penniman); "Changing Dimensions: Managing Library and Information Services for the 1990s--A Global Perspective" (Vinod Chachra); "Internationalizing Libraries, Internationalizing Librarians" (Jordan M. Scepanski); "Enhanced Access to a Science Research Collection: Serials Analytics and TOC/DOC at Caltech" (Mary E. Ito); "Impact of Cultural Diversity and Technological Changes on Library Services in Academic Libraries" (Sushila Shah); and "Island InfoFiesta, 1990: A Review" (Chih Wang). Most of the papers contain references. (LB)

Changing Dimensions: Managing Library and Information Services for the 1990s: A Global Perspective

Proceedings of the Asian/Pacific American Librarians Association Atlanta, Georgia, July 1, 1991

Edited by
Ravindra Nath Sharma

Educational Resources
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FORWARD

Futurist Alvin Toffler in his book, The Third Wave, stated that our world is entering into the "electronic and information age." Since his prediction, electronic devices such as computers and telecommunications have changed the American society dramatically. Industrialized society has transformed into the information society that has brought computer-based information center stage and has profoundly affected the management of information based activities such as libraries and education.

These phenomenal changes brought about a revolution in the management of libraries and no one can predict the impact of computers and telecommunications on library and information services. For example, computer library networking implies cooperation and sharing of resources for the purpose of enhancing services to users and usually increasing efficiency. Ideally, library networks have improved the operations and opened up the collections and services of libraries to the users of any single library. As a result of the growing capabilities of automated library networking systems, librarians continue to have a major role in the area of information management. Emerging technology such as telefacsimile and CD-ROM have further challenged librarians and altered delivery and storage of library services.

Recognizing these significant challenges and opportunities of technological innovations present in today's society and the library community, at the 1991 APALA Annual Meeting in Atlanta, we selected as the theme, "Changing Dimensions: Managing Library Information Services for the 1990s and Beyond: An APALA Perspective." We encouraged our members and invited distinguished speakers to discuss this topic from all dimensions of library and information related fields. Presenters had the options either to write on actual issues or to conceptualize a futuristic phenomenon that will affect the management of library and information services. I was happy to see that speakers, as well as our members, met this challenge with high standards and integrity. We are pleased to present these papers to benefit the general readership and as our contribution to library literature.

Abdul J. Miah
President, APALA 1990-91

Richmond, Virginia

Introduction

The Asian/Pacific American Librarians Association (APALA) is known for hosting excellent programs. The Association is affiliated with the American Library Association (ALA) which is the oldest and the largest library association in the world. APALA's Meetings are always held along with ALA conferences in January and June of every year.

I had the honor of acting as the moderator of APALA's Annual Conference in Atlanta, Georgia. We had three distinguished featured speakers who delighted the delegates with their papers.

W. David Penniman, Ph.D. presented his paper on "The Changing Dimensions: Managing Library and Information Services for the 1990s." He traced the development of technology and how it has changed American libraries. He said that it is important to motivate those who manage libraries. In his paper, he encouraged librarians to apply for research grants because the Council on Library Resources has money for good research proposals.

Vinod Chachra, Ph.D. spoke on the "Changing Dimensions: Managing Library and Information Services for the 1990s: A Global Perspective." He talked about the changing views of computing, changing nature of communication systems, and delivery of library automation services in the global community.

Jordan M. Scepanski spoke on "Internationalizing Libraries, Internationalizing Librarians." In his view internationalization of libraries is important and "American librarianship has much to offer the rest of the world ... we can help in the advancement of libraries and of the profession world wide." He discussed the problems and barriers to internationalization.

During 1990-91, APALA invited papers from all interested members. The response was very good and three best papers were selected by a panel of judges for presentation at the conference. Due to the shortage of time, these papers could not be presented but have been included in the proceedings for the benefit of all librarians, information specialists and scholars.

Ms. Mary E. Ito wrote a paper on "Enhanced Access to a Science Research Collection: Serials Analytics and TOC/DOC at Caltech." In her paper, she has discussed analysis of serials, a method to provide better access to the collection, including the development of Tables of Contents/Document Delivery (TOC/DOC).

Ms. Sushila Shah wrote an excellent paper on the "Impact of Cultural Diversity and Technological Changes on Library Services in Academic Libraries." She has dealt with the growing cultural diversity and technological changes which are still being introduced in academic libraries in the country. Her suggestion to librarians is to educate themselves about the cultural differences of ethnic groups and the problems they face in the U.S. It would help them to serve the growing population of minority students and their needs in a more effective way. Ms. Shah is of the opinion that technology is expensive and there are not enough funds available to introduce the state of the art. Therefore, library administrators should write grant proposals and seek funds from other outside sources.

Chi Wang, Ph.D. in his paper, "Island InfoFiesta, 1990: A Review" reviews the first demonstration of information technology ever held in Guam. He gives a clear picture of technological development in the Western world and the current status in the Pacific. Dr. Wang is of the opinion that the introduction of advanced information technology in Guam was an excellent addition and it motivated professionals and others in the Island.

All papers of the APALA Conference were excellent, full of juice and meat. It is my hope that interested librarians and other professionals will learn new ideas from these papers and will be able to use them for their research needs. I am grateful to all speakers for coming to Atlanta to participate in a very successful conference and presenting their papers. My special thanks to Dr. Abdul J. Miah, President of APALA for giving me an opportunity to act as the Moderator for the special session. I am thankful to my secretary, Earlene Huck, who prepared the text of these proceedings for publication purposes. In my view these proceedings are a good addition to the library literature.

Evansville, Indiana

R. N. Sharma

The Changing Dimensions:
Managing Library and Information Services for the 1990s

W. David Penniman

Today I'm going to discuss our future. It's easy to be an expert in that realm, since nobody has any exceptional experience with the future--or any experience at all, for that matter. But we do have varying views of the future. Some people, for example, believe the future (especially the technological aspect of it) "unfolds" like a giant preprinted road map. Such people, be they library directors or other information service providers, strive to peek beyond the folds and guess ahead about the next major event. This approach assumes a predestination that I find difficult to swallow. I believe we must shape the future, not let it shape us.

We have seen tremendous changes in information technology in our own lifetime. We have seen storage technology advance from paper to microfilm to magnetic and optical technology. Where we once could store only a few hundred characters per cubic inch, we can now store billions of characters per cubic inc. Transmission capabilities have made similar startling advances. We've jumped from the 50 words per minute of telegraphy to billions of words per minute via glass fibers, and 100 trillion words per minute is within reach. Processing has gone from hundreds to billions of instructions per second, and parallel processing makes the rate practically limitless. Yet our ability to process all this

information is virtually unchanged from the time our ancestors emerged from their caves where they had scrawled primitive symbols on the walls. They could process symbols at about 300 units per minute--and so do we. This limit, and our inability to speed up our own processing capacity, is symbolic, I believe, of our greatest challenge. That challenge is to learn how all this information (which is stored, processed, and transmitted as bits) can be delivered as knowledge that is of use to humans.

Our ability to use technology to address this last barrier (the barrier to understanding) is sorely limited--not because we lack technological know-how, but because we lack strategic know-how. Paul Strassman, former vice president of Xerox, agrees. In his book, Information Payoff,[1] he argues for the preeminence of strategy over organizational structure or technology. He states that technology and organization are enablers, but that strategic goal seeking is the key to preparing for--and surviving in--the future. And strategic goal seeking has never been more crucial for libraries than it is today, because libraries have the potential for delivering knowledge, not just bitstreams. Libraries can focus on content as well as channels. That is what sets them apart.

Of all the information delivery systems that exist in our society, none is so pivotal as the library. For the library can be, first and foremost, a people-oriented information delivery system. Libraries can deliver information across time (their archival function) and space (their lending and resource-sharing

function), but they fail to serve if they do not focus on delivery. We lose sight of that when we spend our energies on elaborate structures in which the information is housed, or the professional status of those who run these structures. But we must not lose sight for long, because I believe that libraries are strategic to the fabric of any society as well as strategic to the institutions in which they reside. I also believe we are in danger of damaging that fabric, not because of technological change nor because of financial crises--though both are forces to be reckoned with. I believe libraries are in jeopardy because of a failure in leadership. And I am not alone in that view. Wilf Lancaster says of librarians, "The survival of the library profession depends on its ability and willingness to change its emphasis and image."[2] Lewis Branscomb agrees; about librarians, he states: "If librarians are to play a creative role ... they must again become teachers and innovators, and not custodians, lest the treasures in their custody are made obsolete by alternative services that fail to serve humanity as imaginatively and profoundly as they could."[3]

But the process of change is a difficult one. Pat Battin says, "One of the most powerful deterrents to change in conservative institutions is the existence of strong autonomous vested interests and the fear of losing one's empire."[4] I argue that without change, the empire (if we must call it that) will certainly be lost. I have referred to this as the "paradox of change."[5] If we do nothing, we will change, but not as we wish,

for we are in a changing environment and without adjustment our institutions degrade. To survive we must adapt. To state the paradox simply: To remain as we are--that is, vital--we must change; if we don't change, we won't remain vital.

And what of the current environment in which we all reside? How is it changing? In a recent issue of the Bulletin of the American Society for Information Science, Carla Stoffle, reporting on a session at the annual meeting of ASIS, summarized the societal factors affecting the parent institutions of libraries in the United States as follows:[6]

- First is the switch from a manufacturing-based to an information-based society. I would modify that to say that we are seeing a switch to a service-based society where companies are focusing on customer service even though they may still manufacture goods--often in other countries. Universities, too, are beginning to view themselves in this service-base environment from a business viewpoint.
- Second, she points out an increased emphasis on "accountability." Institutions are being challenged to their very core. Their worth is no longer accepted on the basis of anecdotal evidence. That was certainly true at Bell Labs, where I worked until a few months ago. Characteristic of this trend, I see a new level of accountability emerging. Institutions are being asked to measure their performance and to have their

leaders accept responsibility for this performance. If they don't achieve their goals, new leaders are brought in. Institutions that were previously funded routinely are being asked to demonstrate their worth. My recent visits to a variety of institutions tell me that this trend is increasing, and it is not limited to educational institutions or industry; it is pervasive.

- The final factor identified in Stoffle's article is the changing demographic makeup of the United States. This move towards more cultural diversity is more adequately described in a report titled, Workforce 2000 that was issued a few years ago.[7] It caries implications for all institutions and organizations in terms of the emerging labor force and user base.

I would add two other factors to Stoffle's three, which I have just listed.

- First is the increasing globalization of our industries and institutions. We can no longer operate in isolation for both competitive and moral reasons. Companies and countries are no longer isolated. East and West are meeting in the market place as well as in political forums. And institutions such as libraries must learn how to open global boundaries as well.
- Second, a trend we can no longer deny: a shrinking economy in the United States in which even some of our most vital institutions are having to rethink their

levels of spending. At the same time global economics is playing an increasing role, we see a fragmentation of Eastern Europe, the unification of Western Europe, and the continuing emergence of the Pacific Rim as a major economic force.

If these are the forces acting upon parent institutions, what about libraries themselves? Certainly technology has played a major role in the evolution of libraries and will continue to do so even in (or especially in) tight economic times. But my position is that we must look at our libraries as social systems, not merely technical systems. We must act in social terms when we look to the changes ahead for libraries.

We must change the motivation of those who manage these information delivery systems we call libraries, and the problem of motivation rests with how our leaders of today and tomorrow will be measured. For what will they be held accountable? If they continue to be measured on the basis of the size of their collections and subscriptions, the number of staff reporting to them, the number of computers they control, or the number of databases they own, we will continue to have static, nonresponsive organizations that fail to serve their users as fully as they could. The leaders of these services will talk technology, but will be thinking about control of assets. These leaders will be skeptical of some of our latest information technology, because they have not, in the past, been rewarded for increased productivity--especially if it led to a decrease in

their assets, against which their value has been judged. So I would argue that initially we must change the way we measure success for our information service providers. With the correct measures, we will encourage them to consider the drastic reengineering of their enterprise that must occur and prepare them to rethink how their current dollars are spent.

Where will these new measures of performance come from that help to drive the change process? Who will give them to our library leaders? I believe the leaders of these services themselves must develop these new measures, and they must make a decision. They must choose a new philosophy of information service leadership.

The traditional view is that libraries are institutions providing service of immeasurable value. Most libraries function under this philosophy. Some MIS facilities do also. Fewer computer centers do, but many are still funded as if they believe this "immeasurable value" philosophy. No commercial information services operate under this philosophy--for long. As the overhead costs of information services in all institutions come under the magnifying glass, this philosophy, I am convinced, will cease to be viable.

The alternative philosophy is that every information service or product has a measurable value. The value of a service may be its cost versus the cost of a competing service when the unit costs of both are made explicit. However value is computed, it needs to be made explicit, or the value will end up being

realized too late as the lost opportunity cost once the service is eliminated or seriously curtailed.

This approach of measuring value (as well as cost) has serious implications for the infrastructure of a library. It moves the library and its services into the mainstream of the broader community in which it resides. It positions the library as a delivery mechanism rather than a warehouse, with an emphasis on output, not assets. It also implies that the mission and goals of the library should be aligned with the broader mission and goals of the institution in which it resides, and this is crucial. The library must become more tightly coupled in its planning and execution with the larger institutions it serves.

This approach consequently moves library leaders closer to key decision makers who understand this type of quantification, and closer to MIS and computer center managers who are more likely to use such quantitative approaches.

The Council has "put its money where its mouth is" in attempting to bridge the gap between library leaders and the key decision makers in their parent institutions. The Council has done so by funding four projects at $100,000 each at the following institutions:

- Columbia University
- A consortium of SUNY universities (Albany, Binghamton, Buffalo, and Stony Brook)
- Harvard University
- A consortium of North Carolina universities (University

of North Carolina at Chapel Hill, Duke University, and North Carolina State University)

Each proposal was quite different, but each project will address in a significant way the essential elements for integrating the planning processes of the libraries and the broader planning processes of their universities. In the future I believe these studies will be viewed as strategic activities in elevating the issues of library planning and operation across many academic institutions.

I believe that changing the measures of success for information services and service leaders, when accomplished, will be equally strategic. Changing their philosophy of management will also be necessary. But we need to go beyond that. We need to learn how to create "learning organizations"--i.e., organizations that treat every effort, every group, every program as an opportunity to share experience and to learn from that experience. And that is the challenge for all of us. I believe that foundations such as the Council on Library Resources can be vehicles for change in the library community. They can help to create these "learning organizations." And they can help to address issues that you are all concerned with. These issues, in concise terms, are:

- how to live with constant or declining funding
- and yet continue to maintain the information flow that is essential to a free society and an increasingly global environment.

I don't want to mislead you, however. In the total scheme of things, foundations provide a very small amount of the total funding used by libraries. The Foundation Center, which tracks grants such as those given by the Council, has compiled statistics for the American Library Association Yearbook on the role that private foundation funding has played in augmenting library activities. Let me summarize what they have reported.

- Total library funding from private foundations for each of the past several years has been approximately $72,000,000 annually. The total number of grants was approximately 500 annually (only grants over $5,000 were reported).
- Libraries in general receive a very small percentage of total foundation funding dollars--between 1 and 3 percent. Furthermore, grant funding is a small percentage of total library funding--only about 1 percent.

The Council on Library Resources funded just under $1,000,000 of activity last year. I expect to develop a new and expanded set of programs later this year that will increase the annual funding level, but let me caution you. The future will not go to those who, through prospecting, find a new pocket of foundation funding to stretch their budgets and continue in the same direction as in the past. The future will belong to those who take the bold steps necessary to redesign our institutions and methods of operating, and the Council intends to help those

interested in taking such steps. The areas of interest to the Council in the future will be based on the strong belief on my part that we cannot continue as we are. We must be prepared to be held accountable for the benefits as well as the costs of the services that we provide. That is true for the Council as well as for libraries.

Many of the issues I've addressed today will be reflected in the research that the Council will fund in the future. I have already said that libraries must be viewed, first and foremost, as information delivery systems, not warehouses. The dilemma is that, as delivery systems, libraries still have many facets: that of warehouse, gateway, intermediary, a channel in the scholarly communication process, and a preserver of "what we know." The major challenge must come in what we see as the driving force or motivation for libraries. For what will library leaders be held accountable? When these leaders have their backs to the wall (as many now do), what will be the essential vision and force that motivates their decisions? Will it be risk averse or bold? How will the success of the institutions they lead be measured? I believe the Council can help bring about necessary changes in this community and I believe we can help bring about those changes with a sense of urgency that is essential for the future of the information systems that will serve society.

To that end, I expect the Council to support research that addresses the following questions:

- How much do we know (in a "total quality management"

sense) about the specific functions that a library performs? What are the measurements that can be applied to these functions? The Japanese have learned well how to apply quality management techniques in their industries. U.S. industries are now learning how to do that as well. It is time for librarians to apply those tools to their endeavors.

- What are the unit costs of various library functions, and how/why do those costs vary across libraries?
- What are the ways in which we can measure benefits (for we must begin to do so)?
- How can we analyze library services on a detailed basis from the user's viewpoint? What additional systems (bureaucratic, economic, etc.) must be considered to understand those services? How can we assure that libraries are primary information delivery systems rather than sources of last resort?
- In the educational arena, how can we assure that we are preparing leaders for tomorrow's libraries (libraries that must operate in a global arena)? What skills will they need, and where will they acquire those skills? How can we assure that they update these skills on a continuing basis? And how can we assure that our leadership reflects the diversity of the population it will serve?

In short, how can we assure that our libraries become the

information delivery systems of the future and that our leadership has the necessary skills to implement those systems? The Council can play a major role in this transformation and I intend to see that it does. I would be remiss if I didn't give you at least some guidance on how to approach the Council if you have an idea for a project:

Before you send in a full-blown proposal, send us a preproposal letter (or give us a phone call).

- Discuss the general problem you want to address.
- Why is it important to you?
- Why should it be important to CLR?
- Why should it be important to other groups--i.e., are the results likely to be extensible? Do they have regional, national, or global implications?
- What are the general ballpark costs?

If we move on to the proposal stage, then more detail will be required, especially in the area of assessment--i.e., how can we measure the results to know if what was done was effective?

Jim Haas, my predecessor as president of the Council, said that the function of librarianship is to promote and continuously improve the ability of society, and of each individual, to make use of what has been previously learned or created.[8] That process of continuous improvement calls for a willingness to commit to lifelong learning and development on the part of the library community as well; that commitment is especially true for its leaders.

Robert Greenleaf, who has written extensively on the subject of the leader as servant, said that the real culprit in holding back the more rapid movement of our institutions is not evil people or stupid people or apathetic people but good, intelligent, and vital people who fall prey to fuzzy thinking and fail to lead.[9] In short, it is people who have the potential to lead but don't respond to the call; who have a vision but fail to be a servant to that vision. I believe we must address this issue of leadership on a global level and seek out leaders who have the vision to help make the future of libraries a vital one.

NOTES

1. Paul Strassman, Information Payoff: The Transformation of Work in the Electronic Age (New York: Free Press, 1985).

2. F.W. Lancaster, Libraries and Librarians in the Age of Electronics (Arlington, Va.: Information Resource Press, 1982).

3. Lewis Branscomb, "The Electronic Library," Journal of Communication 31 (Winter 1981): 143-150.

4. Patricia Battin, "National and International Perspectives" (Paper presented at the meeting of the Library and Information Resources for the Northwest Advisory Committee, July 31, 1984).

5. W.D. Penniman, "Tomorrow's Library Today," Special Libraries 78 (Summer 1987): 195-205.

6. Carla Stoffle, "Libraries, Funding and Creativity, Part I: Funding," Bulletin of the American Society for Information Science 17, no. 2 (December/January 1991): 16-18.

7. William Johnston and Arnold Packer, Workforce 2000 (Washington: U.S. Department of Labor, 1987).

8. Warren J. Haas, "Improving the Quality of Library Schools in Research Universities" (CLR internal document), published as "Library Schools in Research Universities," in Council on Library Resources Program Reports (Washington, D.C.: CLR, 1990), 47.

9. Robert Greenleaf, The Servant as Leader (Newton Center, Mass.: Robert K. Greenleaf Center, 1973), 34-35.

Changing Dimensions: Managing Library and Information Services for the 1990s - A Global Perspective

Vinod Chachra

AUTHOR'S NOTE: Some of the ideas included in this presentation appear in previous talks and papers by the author.

The topic I have chosen for this afternoon's presentation is "Changing Dimensions: Managing Library and Information Services for the 1990s - a Global Perspective." Perspectives can be dangerous. I will share mine with you, but before I do, let me share the story that illustrates how dangerous perspectives can be.

A Texas rancher had a huge range. He and some of his friends went to Japan to study terrace farming. They visited this Japanese farmer who had all of three acres of land on which to farm. As you know, Japan is a very small country and the farms there are very small compared to American farms. The Japanese farmer said with pride, "You see that tree over there; that is one end of my farm. You see that road there; that is another boundary of my farm. You see that fence there, that is the third end of my farm. What do you think?" The Texan was just not impressed. He said, "Let me tell you something. On my ranch I get up in the morning, I get in my car and drive westward all day long and come sunset, I still have not reached the other end of my ranch." "I know exactly what you mean," said the Japanese. "I, too, had a car like that!"

So, if I'm talking about farms and you're thinking about cars, perhaps you can raise your hand and we can have an interchange of questions and get the point addressed.

I have several ideas or perspectives that I wish to share with you. The **first** among these is labeled the Million Multipliers. Dr. William McKeefery said that the impact of any technology is best determined by the factor by which that technology multiplies human capability to do a given task. For example, automobiles moving at 60 mph represent only a 15-fold multiplication over walking at 4 mph. The invention of the plow represented a 10-fold multiplier over previously known techniques for tilling the land. The introduction of chemical fertilizers in agriculture is another 10-fold multiplier. The plow along with the chemical fertilizer are a 100-fold multiplier. The two together brought about the agricultural revolution. The invention of the steam engine was a 1000-fold multiplier and brought in its wake the industrial revolution. Jet transportation, which has made our world smaller, at 600 mph is only a 150-fold multiplier over walking. Occasionally, we come across a technology that represents a million-fold multiplier. There are only three such technologies known to man. The first of these technologies was electronic communications. Originally by wire, and then by wireless, we learned how to send messages and signals a million times faster than previously known techniques allowed. The second million-fold multiplier is nuclear energy. I submit we have yet to learn how to deal with

this technology. The third million-fold multiplier is computers. With the convergence of computer and communications technology we will, for the first time, have a million-fold multiplication of a million-fold multiplier. If a 100-fold multiplication brings about the agricultural revolution, and a 1000-fold multiplication brings about the industrial revolution, can you imagine what might happen when the true power of a million-fold multiplication of a million-fold multiplier is tapped? In order to realize the full capabilities of these two million-fold multipliers we have to integrate these technologies with the information contained in our libraries.

The **second** perspective deals with the changing view of computing. Computers are no longer computational devices. How we use the computer depends on our view of computing. We started out by thinking of computers as number crunchers, and then they evolved into process controllers. Process control computers started controlling our machines and our factories. The computers became text processing machines. The most predominate application of computers today is text processing. Computers were used next as communications processors providing greater flexibility and self direction to communications. At present, computers are no longer thought of as number crunchers or process controllers or text processors or communication devices. They have become ubiquitous machines and act more and more as media converters. They allow information to be changed from electronic media to print, to graphics, to sound and to image, such as

animation and motion pictures. For example, a musical score can be seen as a score (print), can be played as a sound track (music), or can be displayed as a sound pattern (graphics). This dynamic media conversion allows us a new dimension of understanding and visualization.

Third, the nature of communication systems is changing. Our telephone systems were designed to connect people. We have done an excellent job with these systems. There are about 280 million people in the U.S.A., but we have more than 5 billion telephones. Thus, for every man, woman and child in the U.S.A. there are, on the average, more than 18 telephones. This statistic says two things. First, we have an obsession for connectivity. We never want to be away from some device that brings us together. And second, it says the techniques we are using to make these connections are location dependent. If our communication systems were location independent (like some cellular phones), then each one of us would need only one phone. But because we have to go to a unique location to get access, it turns out that we have to have 18 telephone sets per person to provide the connectivity. There is at least one company that has visualized this problem and has tried to address it in some way. The perspective they have is global. This company is proposing a number of low orbiting satellites that will provide communications from individuals to individuals across the world. Since the communications will be by satellite, it will be to a great extent distance independent as far as operating cost goes. The distance

between any two points on earth (surface distance) will be so insignificant compared to the total distance that the signal has to travel to satellite and back that the concept of "long distance" will have to be redefined. This technology has the promise of making interpersonal communications distance independent. In the end it will be just as easy for me to talk to my neighbor in Blacksburg, Va, as it will be to talk to somebody half the way across the world in India or Malaysia. When this happens, our information needs and our delivery systems will have to be rethought. When communications becomes distance independent, the economics of information delivery will change and the models we use now will no longer be valid. I have had the opportunity to work with libraries around the world and very often the final architecture for information delivery is determined by the reliability and cost of the communication systems that are available.

Fourth, I would like to discuss some considerations in the delivery of library automation services to a global community. The first among these is the requirement for multilingual capabilities. Multilingual capabilities in automated systems come in three stages. The first stage is where the system has to support multiple languages. There is no problem in doing this. Vendors can have an American version of the system, a Japanese version of the system, or for that matter a version for each language. Such a setup is easy to implement. However, more and more users want true multilingual systems that handle many

languages concurrently. Thus the second stage of development is the ability to switch languages dynamically. For example, the VTLS system can switch among 16 languages directly from the screen without having to change sessions or terminals. The third stage of development is to make the system completely language independent. The user interacts with the system with an icon-based graphical user interface (GUI). The user portion of the interaction language is independent. However, the computer's response still has to be language dependent. GUIs will become more and more readily available in automated systems.

A second consideration in the delivery of library automation services in the global community deals with the handling of character sets. Because we come from a multilingual world, there are different requirements of character sets and different support for the character sets. Clearly, the system has to have the capability of handling multiple character sets. At the most rudimentary level of implementation an automated system might require that each database have its own defined character set. This means that Hebrew, Greek and Arabic data cannot coexist with each other or with Latin data. This level of implementation is no longer acceptable. Many countries are multilingual and require different character sets. Finland (Finnish, Swedish and English), USSR (Cyrillic and Greek), Switzerland (German, Italian, French and English), Malaysia (English and Arabic), and Singapore (Chinese and English) are examples. This places a requirement for multiple character sets within the same database.

However, even this is not enough. Because names, subject headings and notes are handled in particular ways, there is a need to have different character set support within the same record. When you get down to it, there is a need to support multiple character sets within the same subfield of a given tag of a given record. This problem gets further complicated by sort orders and filing rules. I won't go into that level of detail here. Suffice it to say that the support of multiple character sets is not a trivial issue.

A third consideration in the delivery of library automation services in the global community deals with the support of various MARC formats. The United States uses the US Marc Format. One of the main reasons for the development of the MARC format was easy interchange of information between computer systems. However, in the global community there are almost as many MARC formats as there are countries. UKMARC (UK), AUSMARC (Australia), FINMARC(Finland), LIBRISMARC(Sweden), MALMARC(Malaysia), GBLMARC(Russia) and CATMARC(Catalunya) are examples of the different MARC formats that exist around the globe. Some libraries such as the National Library of Scotland have concluded that the internal storage of their data will be in US MARC format to facilitate the transfer of data from external bibliographic data sources. They are able to export their data in UKMARC format. I have spoken with many national libraries across the world and there is still a perceived (and often justifiable) need to work with their local MARC formats. Hence

the automated system must support different MARC formats for internal data storage and indexing and must support the mapping of the internal MARC format to different formats (including UNIMARC) for data export purposes. Unfortunately, the mapping from one format to another does not always preserve all the data nor is it always reversible. (A record in UKMARC mapped to USMARC - or UNIMARC - and then mapped back to UKMARC may no longer be the exact same record that you started with.)

A fourth consideration in the delivery of library automation services in the global community deals with the support of various display devices and keyboards. All devices cannot display all the characters that are stored, nor can all keyboards enter all the characters that are stored in any given character set. The automated system has to be able to provide multiple mapping of input and display characters. Any character entered on the keyboard has to be translated first so that it is consistent with the character set (one or more) used for internal storage of the data. Then it has to be translated again upon display to match the character set of the device being used for display purposes. So any properly designed automated system for the global community will have at least three different mappings (input mapping, sort and store mapping, and display mapping) going on internally in the software. If these mappings are not supported, then the system becomes very device dependent, thereby limiting its usefulness.

A fifth consideration in the delivery of library automation

services in the global community deals with the support of multilingual subject headings. Take for example a subject search on the word *history* in a multilingual database. Should the computer display all the hits that match *history, historia* and all the other multilingual words for the word *history*? Is the computer system obliged to display to the user all the information in all the languages that are contained in the database? Or should the computer system protect the user from the potentially unnecessary information it provides just because it can provide it? This is an easy question. There are other more complex questions. How to handle the question of cataloging, searching and authority control in a multithesauri, multilingual environment? This is a complex problem that has to be addressed. VTLS has done some work in this area. But that is a subject matter for another time and place. Suffice it to say that an automated system has to be aware of and, if possible, address this very important question.

A sixth consideration in the delivery of library automation services in the global community deals with the support of multiple classification systems. Classification systems are used for different purposes around the world. The Library of Congress Classification System (LCCN) is used by many libraries in the U.S.A. both as a classification system and a location system (shelving system). The Dewey Decimal System is used by many other libraries in the same way. Unfortunately, this is not true in the rest of the world. Many countries use classification

systems, such as the UDC, that do not serve any location purposes but rather act as a substitute for a subject classification system. Since a book can have many such classifications attached to it, it cannot be used for shelving purposes. Further, in the absence of formal subject headings in some libraries, searching by subjects has to be done through the classification system. This is not user friendly at all. In fact, users need the help of librarians to do subject searches for them as they themselves may not be (probably are not) familiar with the classification system. Really, for the sake of the users, these libraries should translate their classification systems to true subject headings. Till that time, the automated system must allow for classification independent location and classification independent shelf browsing capabilities.

Clearly, there are a lot of differences between the librarians, library practices and libraries around the globe. In spite of all of the differences, my visits around the world have shown me that they have a lot in common. Although I have worked with libraries and library automation, I am not a librarian myself. The one thing I have noticed among librarians around the world is the universal service orientation. Among all the professional groups I have been associated with, librarians are perhaps the most dedicated and loyal service group I have ever met. I am not sure why this is true - but true it is. Perhaps librarians' dedication to the preservation and dissemination of knowledge fosters a service orientation. Also, by and large, all

across the world, librarians find joy in their chosen profession. They are dedicated to open and free exchange. They are willing to cooperate and to exchange information even across national boundaries. I have also seen many librarians wrestle with the problem of striking a balance between the information rights of the users and the copyrights of the authors and publishers. Librarians have a noble mission; you as a group can take pride in your cause. In an environment that is changing so rapidly let me conclude by recalling one of my favorite quotes: "If a (wo)man is willing to go as far as (s)he can see, (s)he will be able to see further when (s)he gets there."

Internationalizing Libraries, Internationalizing Librarians

Jordan M. Scepanski

I am very pleased to be here and to be participating in a program that has a great deal of interest to me, one which relates to management and libraries, to change, to planning for the relatively near-term future, and most especially to global or international perspectives on these matters. My interest in the international dates at least to the mid-sixties and my time in the Peace Corps, when that organization was still in its infancy, and my association with international librarianship goes back to the early seventies when for a brief period of time, while working for the American Library Association's executive director, I served as staff liaison to ALA's International Relations Committee and the International Relations Round Table. One of my more vivid memories of that time was being a host for the first delegation of librarians to come to the U.S. from the People's Republic of China. Many of you will recall the excitement then when an entire world was opening up to us--an excitement surpassed, perhaps, only by the extraordinary developments these past few years in Eastern Europe.

My particular assignment is to speak to you from an academic point-of-view, to treat management of library services in this fast changing world. Actually, that's a rather broad and open-ended charge and would permit me to pursue any number of possibilities. Some areas of interest, or at least some things

very much on my mind nowadays, include:

- the challenges we all face in adequately funding our programs (that fourteen billion dollar deficit we have in California and what it translates into in terms of my library's budget is obviously very much before me right now)
- the decisive decisions we all will be making concerning information provision and affordability
- the radical shifts in traditional library philosophy which will result from burgeoning costs and developing technology
- how we measure quality in our libraries and how to develop new standards of assessment
- most important of all may be the inter-relatedness of all of the above issues.

But I've decided to pursue the theme of this meeting by focusing on that very area I've mentioned as of great interest and importance to me, and to most of you, I think. I'd like to consider the internationalizing of our libraries and of librarians.

Why this topic? Why is it of importance? I mentioned the mind-boggling change we've seen in Eastern Europe, change that has almost overshadowed other developments in the world, such as those in South Africa for example. Also, I think that the internationalization of our libraries is a subject undoubtedly of importance to this particular audience. The ethnic and area studies basis of the Asian and Pacific American Librarians Association suggests greater interest and familiarity with the topic than would be found in most audiences. [Speaking of the orientation of this organization, the area of the world that is your focus is increasingly one most critical to this country's

future. Coming from a California institution (and, I might add from one located near the west coast's--some claim the nation's--biggest port), I'm reminded that since 1983 more of the U.S.'s international trade has been carried out across the Pacific, than the Atlantic, Ocean].

I also think the internationalization of our libraries should be of relevance to all of us when we consider the appalling ignorance of the world on the part of our students--including our college students--and the American public in general. We've all heard geographic and linguistic horror stories, such as the 1988 Gallup Poll commissioned by the National Geographic Society that found 1 out of 5 individuals couldn't name a single country in Europe, and 1 out of 4 couldn't locate the Pacific Ocean on a map. Some 14 percent couldn't even find the U.S.! Then there was the case of a professor at one of our CSU campuses--the one in Fullerton--who discovered in a map quiz he gave to one of his classes that more than half the students didn't know where this fair city of Atlanta was located.

And what about languages? The President's Commission on Foreign Languages and International Studies reported that 90 percent of Americans cannot speak or effectively understand any language other than English. A couple of the more interesting comparisons I've come across are that more Americans study Latin than study Japanese and that in China there are more people studying English than there are speakers of English in the U.S.

Clearly many of the citizens of this country are ill-

prepared to function in an interdependent, multi-cultural, multi-lingual world. Even our educators have these deficiencies. It's been reported that only 3 percent of the nation's primary and secondary school teachers have any, **any** academic preparation in international topics or issues, and that only 1 percent of U.S. college and university faculty members go abroad each year. It would be interesting to know how librarians compare to these numbers.

Many, of course, have commented upon the implications of these weaknesses for our economic well-being. With more than 6,000 U.S. companies having operations abroad and with U.S. investments in other nations exceeding $300 billion, clearly our bread and butter is wrapped up with the fortunes of others. And vice-versa I might add. Fully one-third of the acreage of U.S. farmland is cultivated directly for export. Looking at education and foreign trade, there are some 375,000 students in the U.S. who hail from overseas (and according to a graphic I saw in this morning's **USA TODAY**, almost 10% of these are from China). Together they represent $3 billion in a type of export earning.

Few would argue that there is a direct relationship between education and competitiveness in world trade. With all of our expressed concern about trade imbalances with Japan, how much attention have we given to the almost 25 to 1 imbalance of Japanese students in the U.S. to U.S. students in Japan? Why are there not more Americans studying in a nation that is seen as so vastly important in the world economy? Returning again to

language, it's estimated that some 100,000 positions in international business are given to foreign nationals because there are insufficient Americans with appropriate language skills.

We smug speakers of English must heed the words of the Japanese businessmen who in response to the question, "what is the most useful language for world trade," replied: "the language of your client." Even when we make the effort to sell our products using the local language, the results are sometimes hilarious ... or grotesque. The Chevrolet NoVa debacle is well known, but then there is the reported marketing of PepsiCola (dare I say that name in this city?) in Taiwan with the slogan "Come Alive with Pepsi" which somehow got translated as "Pepsi brings your ancestors back from the grave."

But back to education and internationalization. Clearly, we are seeing enormous interest in internationalizing curricula. In January of 1989, at the annual meeting of the American Council on Education, the president of that organization stressed that international education was one of three top priorities which American Higher Education had to address in the coming years. Strong trends toward the international are discernable in our business schools, in teacher education, in the language disciplines, in journalism, and in many other areas of professional preparation. Internationalizing the curriculum is seen as an integral part of the strong movement toward undergraduate curricular reform and this phenomenon is evident in

other countries too. A recent report by a commission on reform in Japanese higher education cited the need for an international emphasis as one of four major changes that had to be undertaken in that country.

Sven Groenning, a former U.S. State Department bureau director, now vice president for Education at the American Express Company, has described the international involvement of American higher education in an interesting way. He talks about the foreign policies of American colleges and universities. He says that with their involvement with foreign faculty members, teaching and research assistants, large student enrollments, overseas investment portfolios, collaborative research, and use of foreign funds for capital improvements on campuses, our institutions of higher education are **de facto** conducting foreign policy. One of his examples, that of use of foreign bonds to finance dormitory construction on a major American university campus, brings to mind the negotiations at my own institution with a Japanese educational entrepreneur who is interested in funding a building at our university in a significant collaborative effort. Should this take place, there are a number of implications in it for our library.

Among Groenning's other examples of the enormous involvement of American universities with overseas institutions, investors, and consumers, is libraries. He asserts that Harvard has spent 79 percent of its acquisitions budget outside the United States and that the figure for Yale is 50 percent. He says that most

public state universities spend some 20 percent of their budgets in this way and I find in analyzing my library's budget that we do, indeed, approach that latter figure.

What does all this mean to libraries? What can libraries do about assuring a better international education for our students and a more informed populace in this country? What relevance do much of my foregoing remarks have to day-to-day operations of our libraries?

Clearly, libraries are enormous resources for understanding the complexities of our world. They are critical instruments in facilitating and fostering change in our country and abroad. Libraries are international. Their collections cover international subjects, themes, areas. Many--indeed most--collect materials in at least some foreign languages. There are specialists on our staffs with training and experience in all manner of international subjects.

Librarianship is by its nature interdisciplinary and many influential educators see the internationalization of our institutions of higher education coming about through interdisciplinary and multidisciplinary approaches to teaching and research. My colleague Maurice Harari, Dean of International Education at California State University, Long Beach, has written that:

> the most important issues confronting the world are multidisciplinary or interdisciplinary in character and need to be identified and worked on in that context and in a multinational framework. Hence, the need for an increasing generation of scholars, policy makers and practitioners in all fields who are trained in and committed to cross

> cultural communication and cooperation, in addition to being sufficiently broad-gauged to move beyond their discipline ... and to recognize the many points where disciplines touch each other and even converge and overlap.

What profession, what institution is in a better position to promote and pursue and prompt internationalization among our facilities, student bodies, staffs, and other publics than the library? Indeed, Dean Harari agrees. In a recent communication to me he emphasized the importance of the library's role, saying that he sees one of the challenges of university libraries to be that of sustaining and nourishing internationalization of the curriculum through support for general education, area studies programs, overseas extension and in a host of other ways.

If we are to effectively carry out our missions, we cannot help but take cognizance of the large number of foreign students in our libraries--both as users and workers (I'm told, for example, that at my library we employed some 69 student workers from other countries last year, and that's in a bad budget year)--and the significant numbers of faculty members--particularly in the Sciences and Engineering--who come from abroad. Are we adequately serving these important contingents of our clientele? Are our staffs sufficiently prepared to deal with cultural and linguistic differences that, for example, may inhibit use of reference services or asking for assistance generally, or that encourage group study and learning in ways different from what we are used to?

I also feel that American librarianship has much to offer the rest of the world by providing example, training, advice, and

assistance to our colleagues in the developing nations. We do have among the finest libraries anywhere and our standards of service are unsurpassed. We can help in the advancement of libraries and of the profession world-wide. There are increasing opportunities for American librarians to lend their expertise abroad, and I detect the beginnings of a recognition on the part of American funding authorities and host institutions overseas that investment in sending a librarian to a university in a developing nation pays greater dividends than those that might be expected from other professionals. Lest I sound too chauvinistic about American libraries and librianship, let me say that one of the best things we can do for our colleagues abroad is share candidly with them the mistakes we've made--especially in the area of automation--in order to have them avoid the expense that came with our learnings.

I'd now like to treat briefly approaches to internationalizing and here I am in the debt of my afore-mentioned colleague Maurice Harari. I commend to your attention his occasional report #1 "Internationalization of Higher Education: Effecting Institutional Change in the Curriculum and Campus Ethos." This is a very useful treatment of the principles underlying the internationalizing of educational institutions and some suggestions for doing so.

We might first take up problems and barriers to internationalization and we can start with lack of an international emphasis in our library schools. This is not

surprising give the relatively small size of our graduate library science programs and the range of material that must be covered, nor is it unexpected when viewed in the context of a lag in international coverage in general by professional schools. Nevertheless it is a handicap that might be overcome.

A second barrier is that there is little in the way of rewards or incentives to pursue international activity and involvement. Do we encourage exchange programs or overseas tours of duty by recognizing such when staff are being evaluated for promotions or tenure? Do such things count toward advancement in rank, pay, or position? In most cases, I think not. At my own library this past year, a young, untenured librarian had an opportunity to participate in an exchange with a person from a library in Thailand. Our associate director pointed out to me that not only do our retention, tenure, and promotion criteria not give credit for such work, but that they actually operate against a probationary person by not permitting a stopping of the tenure clock or some other means of taking into account such experience. We also have not taken sufficient advantage of the presence among us of scholars, students, staff, and visitors who can provide us broader perspectives on teaching and learning, scholarship and research, libraries and independent study. I'm talking about the faculty members from our campuses who go abroad, U.S. students who study in overseas institutions for a year, visiting scholars, and our foreign students who might very well have insight into how we carry out our business. How often

do we invite them to the library to conduct seminars for staff, to consider a collection profile from their unique point of view, or to otherwise gain from their knowledge? How frequently do we pursue distinguished international visitors through the international offices on our campuses or through agencies in the community? I'm not talking about just showing off the library at the request of an administrator or some other official, but soliciting the involvement of these visitors in real collection and staff development.

There is too the apathy-and sometimes the cynicism-of staff, the perception that involvement in international activity is for upper-level administrators or experts of some kind.

Unfortunately, there is also disinterest on the part of many of our professional leaders and an unwillingness to place international programs among the profession's highest priorities. In preparing for this speech I talked with a professor in our Graduate School of Education who has done extensive work in internationalizing the curriculum. In addition to other material, she shared with me an item from a Dear Abby column. Perhaps you've seen it:

ONLY IN AMERICA

> "He drove his German car made of Swedish steel and interior of Argentine leather to a gasoline station, where he filled up with Arab oil shipped in a Liberian tanker and bought two French tires, composed of rubber from Sri Lanka."
>
> "At home, he dropped his Moroccan briefcase, hung up his Scottish tweed wool coat, removed his Italian shoes and Egyptian cotton shirt, then donned a Hong Kong robe and matching slippers from Taiwan."

"More comfortable now, he poured a cup of hot Brazilian coffee into an English coffee mug, set a Mexican place mat on an Irish linen tablecloth atop a Danish table varnished with linseed oil from India."

"Then he filled his Austrian pipe with Turkish tobacco, lit it, and picked up a Japanese ballpoint pen with which he wrote a letter to his congressman demanding to know why the United States has an unfavorable balance of trade."

I suppose that clipping could be read in two ways, one implying we shouldn't be engaging in international trade and that this fellow is either ignorant, a hypocrite, or both. A recent poll would support that point of view. It found that 49 percent of Americans believe that foreign trade is either irrelevant or harmful to the United States. I would like to think, however, the item was meant to remind us that trade with other nations is essential. In thinking about that clipping, I was reminded of a certain composite library director:

He leaves a meeting of his faculty advisory committee where he has just reviewed budgetary problems with ten professors, two of whom were born in India and Nigeria.

He walks into the library past a Philipino student reading at a newly purchased table imported from Denmark and proceeds through the stacks where a French student and one from Egypt are shelving books.

In the reference area one of the librarians, of Mexican nationality, is doing a computer search for a Japanese firm located in the university research park.

On the way to his office he talks with a professor who has an endowed chair funded by the Taiwanese government. The professor complains about cuts in the periodical budget, especially cancellation of a chemical serial published in Germany.

In his office he reads a letter from a Turkish student group asking that the library subscribe to a Turkish-language newspaper.

At the end of the day he boards a plane for the ALA

conference and reads council documents on South Africa, Armenia, the West Bank, and Chile. At ALA, he then proceeds to vote in the Council against establishment of an International Relations Office on the basis that it has nothing to do with his library's priorities.

Finally, we suffer from a lack of real coordination and cooperation with our colleagues in the school systems and public libraries. There is much we can do together to advance international activities in our schools, communities, and universities.

To overcome these barriers, to solve these problems we need leadership, commitment, and consensus-building. Internationalizing of the library needs the encouragement and support of administrators both in the institution at large and in the library. It means developing reward systems and incentives that prompt librarians to pursue overseas opportunities, and it means supporting participation in international conferences with time off and with funding, where possible. It means devising structures that permit exchanges, leaves of absence, and other professional cross-pollination and recognizing such as beneficial, not only to the individual involved, but to the institution as well. In recruiting new staff, we have to give greater weight to those who come to us with language skills in addition to functional ones--not just for those in area studies positions, but generally--and those who have cultural, ethnic, and multidisciplinary experiences out of the ordinary. We need to encourage the teaching of courses in comparative librarianship in our library schools, plan programs with international emphasis

at our professional conferences, pursue research in international themes, and generally infuse our own continuing education with international objectives.

We have to recognize that just as the heart of internationalization of an institution is the curriculum, so the critical element of internationalizing the library is the collection--be that traditional monographic and serial print items or the extended collection represented by cooperating libraries and various electronic information services. To both appropriately support teaching and learning and to further the aims of internationalization of our institutions and libraries we must, in the words of Shirley Aaron "develop a global perspective as a foundation for building and evaluating the collection and providing information access."

And perhaps most importantly of all, we need to develop grass roots support and involvement. Internationalization of the library and the profession will never become a reality unless rank and file reference librarians, catalogers, online searchers, and collection builders see it as relevant to everyone. Twenty years ago when I worked on the ALA staff, international library activity was viewed as the domain of the directors, as the preview of the old boys. That can no longer be the case, and it is no longer the case. Of all the observations I have made in these past two years as an officer of the ALA membership unit concerned with international activity, the most compelling is the interest, enthusiasm, and commitment to the international in a

broad range of people at every level of the profession.

But pursuing international approaches and emphasizing a global perspective need not mean enlisting the ardent support of everyone in the library. Harari tells us that "the expectation that most of the faculty" (read librarians) "must be committed to international education is just as unrealistic as the notion that the administration must produce substantial funds to enable faculty to internationalize the institution! A critical mass of 10 to 15 percent of the faculty," he says, "is sufficient to carry forward the involvement." I think those of you who have worked toward such would agree that much can be done with relatively few pressing the importance of the international in our libraries.

Dean Harari's reference to funding brings up the obvious subject of costs. I hold that just as one can make significant impact on the internationalization of a university without massive new monies, much can be done in the library if there exists a commitment from the staff, leadership from the administration, and an international ethos in the program.

But where it may not take wholesale involvement in the effort on the part of everyone on the library staff, nor vast sums of monies to focus on an international future, it does take planning, integrated programming, and the identification of the "international dimension" ... as an integral part of the mission of the library and endorsement of it "as one of its top five or six priorities."

I'd like to close with what Dr. Harari and others have called the challenges posed for educational leaders by the international imperative and what must be done if we are to begin solving some of society's ills using the global perspective we have talked about here. There needs to be scanning of the future, promotion of strong staff development programs, consideration of long term needs, vision, risk taking, and leadership skills. Once again, we must create incentives for individuals to internationalize programs. Building coalitions with like-minded colleagues on campus and in the community is critical to success. Viewing everything we do in an interrelated, interdisciplinary, international context will help to frame the effort. Finally, and maybe most importantly, we must seek to develop an overall environment conducive to a change in thinking. To quote Sven Groenning

> the corporation, the U.S. government, the states, and higher education are all now in a global economy which is causing **change** in public policy, **change** toward complexity ... **change** in learnings needed by students, **change** in the academic disciplines as the key to **change** in the curriculum, a paradigm shift in international education itself and a comprehensive set of concerns and opportunities for the university

I submit those opportunities are most especially there for the university's library, indeed for all libraries, and I urge that we take advantage of them. Thank you all very much.

Enhanced Access to a Science Research Collection: Serials Analytics and TOC/DOC at Caltech

Mary E. Ito

Introduction

Libraries are automating their functions in order to provide greater access to more information in their collections. For example, the June 1989 issue of Information Technology and Libraries contains articles from several libraries that are working on projects to increase user access. User expectations for increased access and more efficient delivery of information have also grown during this time.

As libraries move into the 1990's, traditional services of access and delivery will need to be assessed and, perhaps, revised, and new services will need to be implemented in order to meet user needs and expectations. In this paper, I would like to describe two services developed at the California Institute of Technology in response to user needs: the analysis of serials, and TOC/DOC, online current awareness and document delivery service.

Background

Caltech is a scientific-oriented institution. The campus community consists of approximately 800 undergraduates, 1,000 graduate students, and 800 professors, scientists, and researchers. Ninety percent of this community conducts research in the Physical and Applied sciences, while the remaining 10% focus their research in the Humanities and Social Sciences. The

campus is computer intensive with virtually everyone having access to microcomputers. The campus is also linked electronically with an Ethernet local area network (LAN).

The Caltech Libraries consist of a main building housing the Biology, Chemistry, Humanities, Mathematics, and Physics collections, and branch libraries in the departments of Aeronautics, Applied Physics and Electrical Engineering, Astrophysics, Computer Science, Environmental Engineering, Geology, Management, and an on-campus compact storage facility. The Libraries subscribe to around 6,500 serials and have approximately 500,000 book titles and bound volumes. The Caltech Libraries actively support the predominant research mission of the campus by emphasizing developing the library's collections in the sciences. Since most of our users are interested in current information, serials subscriptions are an important part of our collection, with approximately 85% of the library's materials budget being expended on subscriptions. Of this percentage, 80% is spent on scientific titles.

The research on campus is diverse, interdisciplinary, and specialized. The sheer volume and cost of the universe of scientific literature preclude the library from developing comprehensive collections in all areas. As a result, the library has operated with the philosophy of providing "access to the information" contained in selective subscriptions rather than focusing on developing an exhaustive research collection. To promote this philosophy, the library has developed its services

to maximize the available personnel and equipment resources. This enables the library to provide access to the collection and to match user habits and needs.

Serials Analytics

The analysis of serials was initiated in the late 1960's as a method to provide better access to the materials in the collection. The service began by focusing on conference proceedings and titles in series that were cataloged under the series entry. About five years later, the service was expanded when it was decided that all journal issues and unclassed series would be evaluated for analysis as they were received. Catalog records of analyzed serials were created and then filed into the card catalog. In the Fall of 1989, with the implementation of the first phase of the library's integrated online system, the library began to enter serial analytic records directly into the online system.

Serials analytics provide our users with access to the collection that is not readily available from traditional indexing services or from serial catalog records. The analytic records provide issue level access to the journals, whereas traditional indexing services provide article citation access. For example, the 12th European Conference on Applications of Surface and Interface Analysis was published in the journal, Surface and Interface Analysis (1990, v. 16, no. 1-2). The Conference was analyzed and is searchable in the online catalog by corporate body, editor, title, and keywords in the title.

Science Citation Index covers the journal but only provides access to the specific issue by listing the individual authors' names and article titles. Of course, the traditional catalog record only provides access at the series level; the special analytics record fills the gap between article citations and series catalog records.

In addition to the issue level access that analytics provide, these records are timely. Since the emphasis on campus is research in science, access to the most current information is important to our users. New journal issues are reviewed for eligibility and analyzed on a regular basis each week; thus analytics records are searchable in the online catalog weeks before the article citations appear in traditional indexing sources.

Serials analytics are also created for meetings, conferences, supplements, or other issues that are not picked up by indexing sources. For example, the abstracts of the annual meeting of the Deutsche Gesellschaft fur Pharmakologie und Toxikologie is published each year as a supplement issue to Naunyn-Schmiedeberg's Archives of Pharmacology. The supplement is not indexed by Science Citation Index, nor is there a serial catalog record available on OCLC that could be downloaded into our online catalog. Serials analytics continue to serve the needs of our users by providing timely access to journals that are not indexed by traditional indexing sources as well as journals that are not fully covered by those sources.

TOC/DOC

The TOC/DOC (Tables of Contents/Document Delivery) Service was developed in response to the user's needs for online article citation access to the Caltech journals collection, and the library's desire to automate an existing document delivery service. Online article citation access to journals was a new service; document delivery was already an established library service.

The document delivery service was originally established in the late 1960's when Biology, Chemistry, Humanities, Mathematics, and Physics were consolidated into a new main library building. The service was created as an attempt to keep the journals available in the library for the greater number of users, rather than have individual users check them out for photocopying in their departments. Document delivery forms were made available throughout the building and campus, at all library book drops and branch locations.

Document delivery developed into a popular library service that is extensively used. For example, in 1984/85, 34,263 requests were filled. By 1989/90, the usage had increased to 53,493 filled requests. In 1991, an average number of 250 to 350 requests are received per day. The service is popular because of the ease of billing and the fast turnaround time for filling a request. Faculty and students with budget account numbers can request photocopies by filling out the request forms. These requests are paged each weekday morning by the document delivery

staff, and are filled within 24 hours.

In the Spring of 1988, the Caltech Libraries, working with the campus Computing Office, implemented TOC/DOC on the campus-wide local area network. TOC/DOC is an online current awareness and document delivery service that is specifically tailored to capture tables of contents and article citations from approximately 1,800 core scientific and technical journals that are held by Caltech and indexed by the Institute for Scientific Information's SCISEARCH. Users search a series of databases that contain the article citations using a menu interface. They can then request photocopies of the article or articles they want by completing an online form. The requests are printed each weekday morning by the document delivery staff, and are filled within 24 hours. In addition, if the user wants to key-in a request, there is an option on the menu to call up a screen that can accept the data.

Response to TOC/DOC has been positive. According to the 1989/90 figures, approximately one third of the article requests were from TOC/DOC users. By December 1990, the proportion of online requests had increased to one half the number of requests. Building on this success, the library is continually working to improve the service. Future enhancements to TOC/DOC include providing abstracts with the citations, loading back years, and supporting a user's downloading of citation data into microcomputers.

The TOC/DOC Service is maintained by running weekly ISI

tapes against a "control file" of journal titles that are held at Caltech. This file is a major component of TOC/DOC because it strips the article citations from the ISI tapes for loading into the citation databases. Maintaining the integrity of the Control File is crucial because the program used to match the ISI tapes against this file matches against exact journal titles. Any type of error prevents article citations from being retrieved from the SCISEARCH tapes. Therefore, the Control File is updated weekly to reflect title changes, cessations, and new titles that are being picked up or old ones that are being dropped. A detailed explication of the TOC/DOC Service is available in an article written by a former colleague (Card, 1989).

Conclusions

The analysis of serial issues and TOC/DOC are two services that were developed by the Caltech Libraries in response to user needs. Greater access to the collection than can be supplied by traditional catalog records is provided by these services at the issue and article citation levels. The two services complement each other when a conference issue is analyzed and the specific articles are loaded into TOC/DOC. However, the coverage of these services also extends beyond titles that are shared. Analytics provides access to conferences, meetings, special issues, or supplements that are not covered by traditional indexing sources or by TOC/DOC, and TOC/DOC provides article citations for journal issues that are not analyzed.

In addition to increasing access to the collection, both

services provide access to the information in a timely and efficient manner. Analytic records are created each week and ISI tapes are loaded into TOC/DOC each week. The two services are easily accessible to our users at any time of the day through the campus-wide LAN.

The TOC/DOC service also enhances the library's ability to efficiently fill and deliver article requests. The online requests are downloaded each day and are incorporated into the daily workflow of the document delivery staff. Finally, the online forms give our users an efficient alternative method for placing manual document delivery requests.

The Caltech Libraries actively support the research on campus by maximizing staff and resources as evidenced by serials analytics and document delivery; services that were successfully revised or incorporated into a new service. Building upon these successes, the Libraries continue to enhance the services in order to adapt them to the changing needs of our users.

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Impact of Cultural Diversity and Technological Changes on Library Services in Academic Libraries

Sushila Shah

The growing cultural diversity of the United States and new communication technology have had a great impact on the library services. The advent of the 21st century is both exciting and frightening, posing many challenges as well as the opportunity to provide information faster through newer medium of communication technology to a future pluralistic society.

With the astounding demographic trend of a pluralistic society and a fast changing technology, librarians are concerned with issues as copyright issues, access to government information, illiteracy, affirmative action, strategic planning, information policies, networking, continuing education, management, fundraising and also outreach to the underprivileged. These factors have varied impacts on the traditional American way of life and need to be discussed and analyzed separately.

Cultural Diversity:

The rapidly changing demographics within the United States are forcing more and more Americans to interact with people different from themselves, people whom they do not understand and who have different values and life styles. Projections indicate a significant growth by 2020, in the percentage of the college age population comprising of minorities. The workplace is one major area reflecting the demographic changes. There were approximately 29 million Blacks, 17 million Hispanics, and 5.1

million Asians living in this country by the end of 1985. These three groups alone made up 21% of the U.S. population and are expected to reach 25% by the year 2000. The new labor force between 1985 to 2000 will include:

15% U.S. born white males

42% U.S. born while females

7% Non-white males

13% Non-white females

13% immigrant males

10% immigrant females

This means more women, people of color and immigrants will be entering the labor force. Managing and working in such a diverse environment will mean challenges to both employer and employee.

Minority Students:

Presently, not only academic institutions, but the whole nation stands at cross-roads, facing challenges, as well as pondering on opportunities, of a multicultural society in an increasingly shrinking internationalized world. "Commitment to pluralism" and "cultural diversity" have become buzz words for academic institutions across the nation. Issues and problems of race and ethnicity are being confronted by international and culturally diverse American students on all campus communities across the United States. A working knowledge of the differences in cultural and educational backgrounds can help academic libraries to better understand cultural diversity of ethnic

minorities in the United States and international students, a neglected minority in the academic community.

It is essential that librarians educate themselves on the difficult ethnic realities which the United States is facing in order to offer functional and meaningful service and facilitate education for minority students as well as foreign students.

Librarians should be aware of the following factors which are a hindrance to the progress of minority students as compared to white American youth:

A. The functional literacy rate and an average reading proficiency of underrepresented minority teenagers.

B. In Urban areas, the high school dropout rate is much higher compared to the general population.

C. Minority students more often do not have the library skills needed to succeed in higher education. Some international students may never have used library, because there are no libraries available in their own countries.

D. Minority and international students are often perceived as "information poor."

E. Librarians have to augment their knowledge about the issues affecting ethnic minorities in order to help these students to make effective use of library services.

F. It is extremely important to avoid stereotypical images and attitudes in context of the abilities and

achievement of these students. These students, given a chance, benefit from intensive bibliographic instruction, library orientation and term paper consultation.

Studies have been conducted which validate the contention that bibliographic instruction programs do have positive influence on students' educational career.

Collection development:

A well planned collection program meets the needs of ethnic minority students. At the same time an academic library can develop a varied general collection to support the curriculum. It is also important that libraries emphasize collection development of its resources that are relevant and reflective of the students' cultural and historical backgrounds.

The resources in libraries should be in a variety of formats--print and non-print. Culturally or ethnically oriented library collections have enormous potential to foster a sense of self worth among culturally diverse students.

Enrollment of foreign students in U.S.A.:

In the 1983-84 academic year 339,000 foreign students were enrolled in U.S. colleges and universities. That is an increase of 200% over the enrollment in just the last ten years. In 1990, the percentage of the enrollment of the foreign students must have increased. International students are here for a temporary stay and plan to return to their homelands at the end of their studies, to apply what they have learned here to better their

respective countries. International students also come from varied backgrounds, and in some countries technology is not advanced as we find in the United States. 60% of these students come from countries where English is neither a second language nor medium of instruction in educational institutions.

A second observation is that Americans perceive "foreigners speaking English" as "imperfect English." English language is without frontiers. Varieties of English are determined by one's own background. "The story of English"--produced by Robert MacNeil in video reflects on the history and varieties of English language spoken around the world. Education imparted in English in the other parts of the world is very different than that in the U.S. Some Americans do not have the patience to understand such "foreigners speaking English" with an accent. In general, international students will not approach a librarian for help unless he/she senses a librarian's friendly disposition and willingness to understand his/her needs; only then, these students will approach a librarian for assistance.

Building an interpersonal relationship is very important. It is essential to realize that a positive or negative experience will influence a student's perception of the entire staff.

While conducting bibliographic instructions for international students, it helps to use teaching aids (i.e. handouts, overhead transparencies and the blackboard) to reinforce your teaching. Services like database searching, interlibrary loan and term paper consultation may not be

available to students in third world countries, so it is better to make them aware of these services. A glossary of library terms is also helpful and useful to learn library terminology.

It is also useful for librarians to become aware of the fact that different cultures have different concepts and perceptions of what is acceptable as normal behavior, e.g. African student will not have an eye contact while talking.

Librarians should work in conjunction with international student advisors and ESL teachers to find out the details about international students to respond to the special needs of this growing group. Librarians have to show patience and perseverance which is absolutely necessary for long term effectiveness.

Diverse workplace:

By the 21st century there will be a dramatic change in the demography of the U.S.A. This dramatic demographic change will result in a mosaic workforce within the United States. Employers and employees have to accept the challenges of working together. Employers across the United States are working towards programs of recruitment and retention of minority staff. Many academic institutions are developing diversity programs and in some cases establishing enduring processes that will ensure an active recognition of pluralism. In some institutions "Affirmative Action" is now a criterion for special credit in the merit review process for all supervisors.

Workshops to encourage cultural diversity and to overcome racism:

University of Michigan Library, Seattle Public Library,

Libraries of the University of California and Stanford University Libraries have developed a multi-faceted program to encourage cultural diversity within the libraries, the library profession, the academic program, and the student population. The Minority Internship/Scholarship in Library and Information Sciences program is designed for minority undergraduate students at the State University of New York at Stony Brook and Albany.

The University of Michigan Library has offered three new diversity-related workshops: "Managing a Culturally Diverse Workforce," "Cross-cultural Communications" and "Stairs and Stares" as well as continuing to offer "Overcoming Racism: Exploring the Value of Diversity."

The Affirmative Action plan has been gaining some importance and attention. The importance of implementation and honoring the Affirmative Action plan became an obvious example at the University of California-Irvine. The Affirmative Action plan is still paid lip-service at many institutions, although it does exist without implementing effectively. The progress is there, but it is achieving its goals at very slow pace. The impact of demographic change in libraries is at a much slower rate compared to the rapid progress of technology.

Let us examine the impact of the technology of the 90's on the library services.

As access to electronic information resources increases, librarians have to have special skills to access, organize and to make information accessible and also skills to identify, organize

and analyze the information packages. The technologies have opened up alternative ways to access resources of libraries for information and new ways to deliver information to library patrons. The demographics of college age population are changing dramatically, and educational institutions are taking in a broadening spectrum of students. Hence, the backgrounds and skill levels of entering students are more varied and with a richer mix of these students. This also influences how we are going to provide library services in the future.

The demographic changes and automation have posed both challenges and opportunities for libraries, precipitating new approaches in both public services and technical services.

Public services:

On-line catalog has become a revolutionary tool to retrieve information. On-line catalog has also become a gateway to local systems. When an on-line catalog system has integrated with the campus computer network that allows one system to consult any other system with a minimum degree of difficulty. The access to other systems through the on-line catalog can be of valuable service. The other advantage of on-line catalog is that it can be accessed remotely through personal computers or terminals from homes, offices or dormitories. The other network on-line catalog can be connected through microcomputer to access information. The emerging trend for accessing the on-line catalog is a new instruction package to introduce to users the capabilities and limitation of the on-line catalog. There is a need for a

stronger and more productive role in bibliographic instruction. Charles McClure, in a paper delivered at the 1984 ALA conference, emphasizes the importance of careful planning for bibliographic instruction programs. There is a variation in the design of the on-line catalog which requires unique searching techniques and command languages. With the introduction of on-line catalog, fee-based database searches, inter-library loan or documentary delivery services are provided by libraries for an individual's indepth reference needs.

Impact of automation on Technical Services:

In the beginning of the 80's, the revolution of utilities led to explore the future roles of professional catalogers. The general notion is the future for catalogers lies more in management of the automated system. Robert Holley and Walter High saw that the future role of the professional cataloger as, "manager and planner will intensify." However, Gregor Preston is predicting that professional catalogers will spend time in both public and technical services. Nancy Eaton views that a cataloger's role will be as an adviser on every aspect of automation in the library. Automation allowed many of the former tasks of technical services to be performed more quickly and cheaply by nonprofessional staff. The high hit rate of bibliographic records found on OCLC, RLIN, WLN enabled libraries to process most of their items on-line and efficiently by nonprofessional staff.

The items left for professional catalogers were those that

were difficult to catalog or required original cataloging or problem-solving, e.g. foreign language items, dissertations or non-book items. Technical Services librarians must be trainers, need practical skills, knowledge and commitment to lead the department in the future. The professional catalog librarian's role is not task-oriented but that of leadership. As on-line catalog coordinates closely with circulation and bibliogrpahic records, the Technical Services librarians need to have in-depth knowledge of Name Authority, Subject Headings, MARC and Holdings Formats and other analytical skills. Technical Services librarians act more as managers and leaders than as followers.

Training:

To support new technologies, the staff has to be educated through training. In addition to in-house training, the funding has to be used for training outside the library. The library has to invest in technology for staff use in order to train library patrons.

New software enhancement and changes in library policies and staff turnover, training of staff should be ongoing. Key points in an ongoing staff training program are documentation, follow-up and continuity. Local policies and procedural manual are very important and should be developed and maintained. Training should be a stress-free and as non-threatening as possible.

Funding:

As we are going to utilize more and more computer-based technologies, libraries have to be more aggressive in seeking

funding. Library administrators have to work harder to solicit more funding from their individual administrators and legislatures. Library administrators have to develop the art of writing grant proposals or have to have a grant specialist who can give both time and training to pursue funding for equipment for the libraries. Advance technologies brought opportunities and exciting challenges, but it certainly brought the problems. Technology also brought VDT hazards, privacy problems with automated circulation system, MARC Formats, quality issues in cataloging, copyright issues and much more.

Despite some of the negative aspects of technology, change is inevitable and has become a normal part of librarianship. Management, staff and end-users will have to progress with technology, finding the solutions for the problems it poses, and perform increasingly complex tasks within a better connected environment. Software required to perform these tasks will call for major investments in workstation hardware and training.

In summation, library services in the future will have to be planned and developed with vision. Challenges of cultural diversity, new technology, will lead to an enriched and hopefully enlightened society. For that, commitment and work for these goals should begin now.

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Island InfoFiesta, 1990: A Review

Chih Wang

Introduction

As Alvin Toffler has claimed, "western society has been caught up in a fire storm of change," particularly "in the three short decades between now and the twenty-first century."[1] During these years, the marvelous advance of computer and information technology has especially brought a radical change in every aspect of our human life. Authors have written scientific fantasies, such as the "mechanical educator," that "could impress on the brain, in a few minutes, knowledge and skills which might otherwise take a life time to acquire."[2] Frederick Wilfrid Lancaster, a futurologist in information science, has proclaimed the likelihood of paperless, and further, wordless society.[3,4]

In the real world, "info-spheres" and "electronic cottages" have sprung up, and people have huddled around computers.[5] Electronic universities[6], wired libraries[7], and computer networking[8] have become realities. The cutting edge technology of optical publishing, such as CD-ROMs (compact discs with read only memory), videodiscs, optical digital discs, etc. has been used by every field of human activities including business,[9] education,[10] libraries, and others.

Recently, the U.S. government has been supporting the development of an information superhighway, the National Research and Education Network. When the NREN is implemented, it is anticipated to link together thousands of colleges, universities,

laboratories, libraries, and information centers. It will provide its users with high-speed access to enormous resources of computer power, and enable them to exchange huge quantities of computerized information.[11]

While the western world has been experiencing a radical change, particularly in recent years due to the tremendous impact of new computer and information technologies, the Pacific islands have been mostly bypassed by the new development. Because of their remote geographical locations and unfavorable economic conditions in the past, these islands have only begun to develop modern libraries and computerized information services very recently. The citizens on the Pacific islands, in comparison to those living in the U.S. mainland and other developed nations, have not actually gained full benefits of the new library facilities and the advanced information technologies. The fact that few works relative to the library and information services in the region have been identified in the literature[12] testifies to the underdevelopment of these services on the Pacific islands.

In realization of the huge gap between the information rich in the developed nations and the information poor on the Pacific islands, the Robert F. Kennedy Memorial (RFK) Library at the University of Guam (UOG) recently planned and developed an information fair named the Island InfoFiesta, 1990. The primary purposes of the fiesta were to promote the citizens' awareness of computerized information available on Guam and to demonstrate technological capability in retrieving information for research,

education, business, and other activities. It was hoped that the awareness of the technological capability would encourage government officials, legislators, and the indigenous people on the island to invest their financial resources in libraries and information facilities. It was particularly hoped that this investment would improve library and information services, and would ultimately bring the standards of these services in the region up to those enjoyed by the developed nations. It was further hoped that the Pacific region would be prepared to participate in the new information systems created in the United States and elsewhere in the world so that researchers, scholars, students, and business people on these islands would attain information services equal to those living in the developed nations.

The InfoFiesta

At the InfoFiesta, three online information systems, six CD-ROM reference products, one multimedia interactive videodisc station, and two telecommunications services were demonstrated. In addition, two computer vendors also presented their IBM and Macintosh hardware and software for general computing and office purposes. To provide information on what computerized information products are currently available on Guam and on the subject coverage of these products, briefly described below are the systems and services demonstrated at the fiesta.

1. Online Information Systems:

DIALOG is the world largest databank of information,

providing access to over 350 databases of different subject fields. Some of them contain references and abstracts for published literature. Other databases include complete texts of articles, news reports, statistical tables, directories, business and financial data, and up-to-the-minutes news releases. It has the capability to answer questions like what the latest research results are in a specific field; where one can find out about the corporate history, ownership, affiliation, and financial statements of a company; what has been the U.S. consumer price index over the last twenty years, etc.[13] In addition, the Dialog system can also manipulate data when needed by using its sorting feature.

MEDLINE is one of the databases produced by the U.S. National Library of Medicine. Currently, it holds over six million records relevant to the medical literature published in the world. The system is updated weekly covering 4,000 journals related to the biological and medical fields. It indexes about 60,000 articles each year.[14] The Paperchase software enables users to search the Medline with "plain English."

WESTLAW provides online access to the full texts of federal regulations, administrative law decisions, and federal and state court decisions. It includes federal cases from the U.S. Supreme Court, Courts of Appeals, District Courts, Bankruptcy Court, and Claims Court, as well as case law from all 50 states and the District of Columbia. To support specialized research requirements in such areas as antitrust, taxation, securities,

labor, bankruptcy, and environmental law, the system provides a topical arrangement of databases. It also provides access to the full text of selected law reviews and other legal journals.[15]

2. CD-ROM Reference Products:

ACADEMIC INDEX is one of the CD-ROMs produced by the Information Access Company, designed to meet the needs of college and university students. It indexes over 390 scholarly and general-interest publications, covering the most current four years of data with six months' coverage of THE NEW YORK TIMES. The index is updated monthly. It provides bibliographical information in the subject areas of the social sciences, humanities, and general science. It is useful for finding information on the latest theories in organizational psychology, current attitudes in ethnic and minority studies, opinions about the future of education, theater and movie reviews, etc.

BIBLIOFILE is a brief version of Library Corporation's Intelligent Catalog. It offers audio help messages through headphones, shelf browsing, a log function, bibliography generation, and a display of matching terms. It also can be linked to the Corporation's Circulation System for display of status information if one so chooses.[16]

CLIMATOLOGICAL DATA, HYDRODATA, and SWRA DATA were three CD-ROM products presented by the UOG's Water and Energy Research Institute (WERI). The Climatological Data provides information on daily precipitation, temperature, and evaporation. The Hydrodata contains information on well levels, tide levels,

stream flow, stream stage, sediment levels, and the total settleable solids. The SWRA Data is the parallel version of the printed Selected Water Resources Abstracts, holding the data of important publications in the area of water resources covering the period from 1968 through 1987, and is updated on a periodical basis. These CD-ROMs include data for Guam and selected Pacific islands.

DIALOG ONDISC ERIC is one of the four versions of the computerized database which provides access to educational materials from the Educational Resources Information Center. The Dialog system has an online version file offering access to ERIC. The other two versions are the OCLC CD450 for Education produced by the Online Computer Library Center and the SilverPlatter ERIC produced by Silverplatter Information, Inc.[17] All of these versions contain materials corresponding to the two print indexes. One of them is Resources in Education (RIE), which is concerned with identifying the most significant and timely education research reports, in-house curriculum guides, practical classroom activities plans, bibliographies, etc. The other is the Current Index to Journals in Education (CIJE), an index of more than 700 periodicals of interest to e ery segment of the education profession.

3. Telecommunications Services:

MCI and PORTAL provide telecommunications services. By means of these services, one can send/receive electronic messages or E-mail to/from locations where they have connections with

these services. MCI and PORTAL also provide access to a variety of telecommunications networks, teleconferencing, and meetings in real-time with other users who subscribe to the services.

4. Multimedia Interactive Videodiscs were presented by the Education Interactive Company on Guam. They are teaching tools that can increase students' interest and comprehension. They can enhance teaching and learning through use of dynamic hypercard applications, allowing easy access to thousands of still video or motion sequences in full color stored on the discs. The instructional multimedia videodisc programs include Core Concepts in Math and Science, ABC News Interactive, Language Arts/Reading, and Hypercard Authoring and Repurposing.

Review

At the site of the InfoFiesta, 12 presenters demonstrated the above listed and other information products. In addition, 12 staff members including computer specialists and technicians assisted to set up workstations, troubleshoot, handle registration, etc. A total of 89 participants were present. Among them, 31 were from private business and organizations, 26 from Guam governmental agencies, 18 from UOG, 10 from the U.S. Navy, and 4 from Pohnpei and Saipan. It must be realized that it is the first time that people on Guam and other Micronesian islands have demonstrated their high level of interest in library and information activities. The news media on the island such as the Pacific Daily News[18] and Cable TV covered the event very well.

For the purpose of future planning, an evaluation form was included in the registration packages prepared for the InfoFiesta. The evaluation mainly asked the participants to provide three elements of data: demographic data, the assessment of the fiesta, and open remarks. A scale of 0 - 4 was provided in the prepared evaluation form asking the respondents to rate the activities of the event.

At the end of the fiesta, 57 participants returned their evaluation forms. The responding rate was 65.51. The data are collected and arranged in two tables: Table I, the Background and Interests of the Participants; and Table II, Participants' Satisfaction and Opinions. Note that, in many cases, there is a discrepancy between the total figures in the tables and the total evaluation forms returned because many questions in the evaluation were not answered or not responded to properly.

Three variables related to the participants' personal backgrounds are selected to verify if their assessment of the fiesta was correlated to these backgrounds. For this purpose, the collected data are further arranged into three additional tables. Table III is the Satisfaction Rates of the Island InfoFiesta, 1990 among the Participants with Different Educational Levels. Table IV is the Assessment on the Overall Preparation of the Island InfoFiesta, 1990 by the Participants with Various Occupations; and Table V, the Recommendability of the Island InfoFiesta, 1990 Assessed by the Participants with

Different Frequencies of Using Computers.

The Analysis of Variance was applied to test the variances among the variables of the three sets of data. The obtained F-ratios were 0.54 among the satisfaction rates of the Island InfoFiesta evaluated by the participants with different educational levels; 0.45 among the assessments of the overall preparation by the participants with various occupations, and 0.18 among the answers to the question if the event is recommendable to others by the respondents with various frequencies of using computers. These ratios are all very weak to indicate that there is a difference among the participants of the Island InfoFiesta, 1990, because of their different educational levels, occupations, or frequencies of using computers. In other words, the various personal backgrounds of the participants did not actually affect their assessment of the fiesta.

Note that in Table III, IV, and V, the calculated means are all within the range of 3 - 4, and mostly within the upper quartile in the range. This fact also indicates that although the participants have different backgrounds, their assessments of the InfoFiesta were not greatly deviated from each other. Note also in Table II, the recorded rates are mostly 3 and 4. Only a few of these rates are lower than 3. The conclusion is obvious that, with a scale of 0 - 4, the Island InfoFiesta, 1990 was highly assessed by most of its participants without significant differences among their personal backgrounds.

The almost unanimous rating is confirmed by the open remarks recorded at the end of Table II. It was the participants' opinions that the fiesta was well done and done professionally. They learned many available services, appreciated to have seen the different information systems, and suggested that a similar demonstration be held again. In addition to recording the data of who the participants were, where they learned the information about the occasion, and why they came to the fiesta, Table I also reports that, to the participants, ERIC on CD-ROM, BiblioFile, Academic Index, and Dialog were the most useful systems demonstrated in the InfoFiesta. The respondents recommended for consideration several databases, such as CD-ROM encyclopedias, current contents, etc.

Information fairs are very popular and held quite often in different conferences on the U.S. mainland and in other developed nations. The Island InfoFiesta, 1990, however, is the first event that demonstrated various information products on Guam. The enthusiastic participation of the general public and their high assessment of the occasion indicated that people on Guam and in the Pacific region are highly motivated to learn advanced information technology. The fact calls attention to library and information professionals and providers that these people have a great interest to see these activities again in the near future.

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