GOLDEN OPPORTUNITIES IN THE 80'S
FOR INFORMATION PROFESSIONALS†

Ching-chih Chen*

Since witnessing the establishment of the University of Michigan Alumni-in-Residence Program in 1969, I have quietly followed this annual event with admiration and envy. The fortunate handful of distinguished alumni who have been honored in the past years have all richly deserved to be called leaders in the library and information profession. For this reason, I am deeply honored to be included with these esteemed experts. I am doubly honored to be in the company of the distinguished Mr. Jacobs. Each time I return to Ann Arbor, I am swiftly overcome by feelings of nostalgia. In addition to greeting old friends, I feel a strong urge to visit my former favorite places such as Miller’s Ice Cream Parlor and the Pizza House. I was disappointed, incidentally, to discover that two of my old rooming houses have been redone as University parking lots.

I will never forget that this is where I, as an inexperienced foreign college graduate, away from home for the first time, having traveled half the world seeking an education, had been welcomed and enlightened.

With the last twenty years as a frame of reference, it is clear to see that we are entering, in the 80’s, a period of rare and special promise. We have endured perils, and “an era of stressful change brought on by convulsive waves of shifting values on every front”¹ in technology and economics, in our view of the world

† Convocation Speech delivered at the School of Library Science, University of Michigan in March 1980 when Dr. Chen was presented the School's Distinguished Alumnus Award.

* Dr. Chen is Professor and Associate Dean of the Graduate School of Library and Information Science, Simmons College, Boston.
and of ourselves, in the ways and means of our great, growing society.

Technical Revolution

In the 1950's two major revolutions burst upon the American scene: television and the electronic computer. These two advances have fundamentally altered the communications systems in this country and in the last two decades have had an irrevocable impact on American libraries and information services. As a result, we have witnessed an information age culminating in the quick disappearing of the traditional "gate-keepers" role of libraries and the transformation of our contemporary culture from the traditional print orientation to an expanding, resplendent visual culture in which McLuhan's dictum, "the media is the message," is a constant reality. The new media compete with word-based materials. The information is generated and produced faster than libraries can organize, store, and disseminate it. Thus, we have experienced the birth and transformation of a highly competitive information industry that flourishes on an ability to do what libraries cannot do, such as repackaging information, tailored to the information consumers' specific and specialized needs.

The 1980's represent a frontier of further development and rapid expansion in electronic and telecommunication technologies. In the area of information sciences, the intelligent terminals, fiber optics technology, direct broadcast satellite transmission through digital links, electronic mail, facsimile transmission, computer-based message systems (CBMS), large-scale data base storage, video disc technology, high speed printing, and photography offer us all outstanding, ever-expanding opportunities in the coming decade. It is said that the entire 18.5 million-volume collection of the Library of Congress can be stored in less than 20 IBM-3850's.² It is also said that the information of
that entire collection can then be transmitted via satellite to Europe in less than eight hours.\textsuperscript{3} The video discs currently developed by the National Library of Medicine can store one to ten billion bits of information per disc at low cost.\textsuperscript{4} The capability of our technology has increased even as the cost has declined. The first generation of INTELSTAT satellites in 1965 had only a 50 MHz usable bandwidth and 240 two-way telephone circuits, yet the cost per circuit year was $30,000. The fifth generation of the satellites in 1979 had a usable bandwidth 46 times greater and 12,500 two-way telephone circuits. The cost per circuit year was only $700.\textsuperscript{5} Cost and accessibility through electronics show every indication of continued improvement, while cost and accessibility through print on paper steadily worsen.

Thus, in the 1980's we can expect a dramatic change in the mode of information production, transfer, and delivery. Due to the advent of a low-cost, distance-insensitive, wideband satellite network, both local television stations and cable systems may be partially supplemented by direct home-to-satellite broadcasts; home television sets can be used to display text from central on-line data bases; small, inexpensive-but-powerful computers will provide a means of access to machine-readable data bases at home and at small businesses. Real-time, on-line conversations with consultants, colleagues of the invisible college, and information specialists are well within our technological capabilities.

There can be a sharp increase of remote library browsing, remote literature searching, and remote interlibrary loans. Real-time hard copy reference and document delivery will also be possible. The "electronic library" and/or "Telelibrary" awaits in the not-too-distant future, sooner than many of us would like to imagine. The rate of technological change created by television and mass media in the past two decades was so stunning that many librarians have been unable to assess clearly the far-reaching effect it has had on the world of their services and operations. The pace of change brought on by the telecommunication tech-
nology of the 1980's will surely be far greater in the years ahead. Each of us must ponder deeply the role of new technology as a powerful change agent in the information field. We must understand fully the profound and permanent implications of technology in the future role of libraries and information professionals. Our continued relevance and usefulness depend upon it.

Technology to the Information Deprived

Recent revolutionary developments in electronics have made telecommunications an integral part of the information society. The implications of this startling revolution for the individual and small, community-based organizations are likely to be widespread. At the present time, however, they know very little about the technology, are uninformed about recent and potential uses, are often unable to obtain access to many operating information services, and they are being excluded from decision making (in Congress, government agencies, and business) on many of the complex issues of the electronic information society as was emphasized by the National Citizens Committee for Broadcasting (NCCB) at the theme conference on New Communication and Information Technologies and Their Application to Individual and Community Use in June 1979 in preparation for the White House Conference on Library and Information Services. There is, beyond question, an increasing gap between the information-rich and sophisticated, those able to use the technologies, and the information-poor and deprived, those who cannot use or have access to the technologies. Information is a precious national resource. The accessibility of this resource through the use of technology is not for the elite only. It must be intended for the benefit of all citizens. The correction of this imbalance between the information-rich and poor deserves our serious attention, in-depth research, and honest effort.
Social Information Environment

We have entered the information age. More than half of the working population engages in information-handling activities; fully one-half of the gross national product is related to the knowledge sector; one out of every dollar earned and spent in the American economy will be a direct by-product of the production and distribution of ideas and information, and some $38 billion is spent each year in the U.S. for research and development. Many information scientists predict a four- to seven-fold increase in the world’s output of information by 1985. The information explosion is an obvious and undeniable phenomenon.

We live in a post-industrial society in which the economy consists largely of services built upon a sophisticated information-based and capital-intensive system of production. Consequently, our society is also a knowledge society in that it is information- and knowledge-dependent. Theoretical knowledge will assume a central role as both a source of further innovation and a helpmate to policy formation. There is a constant drive to create new intellectual technology. As the eminent Harvard sociologist, Daniel Bell, believes, in this post-industrial society, the organizational structure of our institutions, including libraries, will undergo drastic and fundamental changes. The service orientation will be “expressed through rendering of professional and technical services which are dependent on cooperation and interaction between people.” In the post-industrial age a more flexible and group-oriented model of organization will replace the bureaucratic and hierarchical ones.

Arthur D. Little’s (ADL) recent study for the National Science Foundation (NSF) identifies three information transfer eras. Era I is a discipline-oriented one, in which libraries play a vital part in providing essentially free information to the end user. Era II is mission-oriented (1950’s to mid 1960’s) and marks the creation of information systems other than libraries. Era III of the late 1960’s is problem-oriented. During this era, informa-
tion used to cope with complex issues and problems is diversified and interdisciplinary. Expert intermediaries are essential in order to ensure a smooth and efficient flow of information. Technology is heavily utilized to expedite successful information transfer. Although the body of the study centers on scientific and technical information transfer, it has general implications for all types of information systems. Clearly, Era III is related to the post-industrial society as discussed earlier. This morning when I was getting ready for breakfast, I heard on the Today program the futurist, Alvin Toffler, talking about his new book, Third Wave. He stressed that the technological and economic forces are such that there will be a great move to have more and more people working and doing business at home. This is what he called the electronic cottage. It is obvious that unless libraries leave the nutshell of Era I, they will grow increasingly vulnerable and increasingly troubled.

Changing User Needs and Demands

In substantiating ADL's findings on the problem-oriented approach in information seeking, Simmons College's recent study on New England's Citizens' Information Needs\textsuperscript{15} and several other smaller-scale studies found similar results. Although information needs arise from a wide range of work and non-work situations, almost three-fourths of the situations related to personal needs. Day-to-day problems accounted for over 52 percent of the total situations. The top ten situation categories are: consumer issues; job-related—technical; job-related—getting/changing jobs; housing and household maintenance; education and schooling; money matters; recreation; job-related—organizational relations; health and job-related—salary and benefits. Despite the sophisticated information systems that rely on advanced technologies, general citizens seem to turn to interpersonal, non-technical sources (52 percent considered them most
helpful) far more frequently than institutional sources (35 percent), such as government agencies, social institutions, and libraries. Of all the situations considered by respondents as most important during the month prior to the survey, in only 17 percent of them was the library perceived as a viable source of information, while in only 3 percent of the total situations, was the library cited as the most essential information provider.

It is clear, then, that community-based information services must be problem- and need-oriented. Libraries, in their current mode of information delivery, should realize that they are neither the only nor the most important source of information in our society. We must realize, and realize soon, that the library of the future will be more than a repository of printed work. If the library is to survive, it must be the public’s main access link to a network of knowledge containing all types of information in all types of formats available through all types of information providers. These are the challenges to libraries in the 80’s.

Economic Pressures

At a time when the prime interest rate has skyrocketed to 19 percent per year, when this country is blighted by double-digit inflation, the financial plight of the modern library is an obvious problem. We are cognizant of the difficulties that we now face. We know, too, that it will get worse before it gets better. We are in a period of difficult transition between unparalleled growth of information, unprecedented expansion of technological developments, and steadily shrinking library budgets. As stated earlier, libraries are labor-intensive information transfer systems of Era I. Technology has been a major factor creating an American post-industrial society with relatively high labor costs. Thus, libraries are expected to be more vulnerable to loss of economic viability in our competitive society with heavy service orientation.16 The whole emerging information world of the
1980's will be a struggle for position, profits, and permanence. We will see that the traditional libraries will play a diminishing role in our total information world. Those libraries surviving the revolutionary changes and developments will be forced to come to terms with expanding technology, the growth of information, the shrinking support, and the expected extension of services.

Opportunities and Challenges

I have presented a rather bleak future for traditional libraries. You may wonder why my talk is entitled "Golden Opportunities in the 80's" rather than "Despair in the 80's." There is a reason for this. You also notice that I have chosen to use "information professionals" rather than "librarians" or "information scientists." There is a reason for this also. It is my firm belief that the library is only one component among many that comprise the total information environment of this country. In the emerging information world of the 1980's, all of those who are engaged in the fields and professions where "information" is a common word should work together and in harmony, rather than in isolation or competition, to construct a unified and effective information service network.

Pursuant to this, there are tremendous challenges in every aspect of our work—education, research, continuing education, management, staff development, communication, marketing, public relations, legislation, etc. In the increasingly difficult and complex years ahead, we must collectively reset our goals and objectives, rearrange our priorities, reexamine our mode of operations, reinvest our energy and resources in new areas of development, and recommit ourselves to a new and more exact set of responsibilities. These must include the increase of our internal productivity and the broadening of our services to information consumers. Let me clarify these responsibilities.
Information Practice

Given the present-day environment, we must, in addition to our traditionally expected competency in the acquisition, organization, and dissemination of information sources, train ourselves to be more effective managers. We must utilize all the techniques to increase the productivity, efficiency, and effectiveness of our operations. This includes the maximization of limited resources—staff, budget, space, human and fiscal management, etc. We also need to investigate, analyze, and predict information consumers’ needs and demands and to develop user-oriented services and programs. We must communicate freely and effectively with the users of our services. We must publicize and sell our services. Finally, we must understand our competitors and find ways to compete or to coexist with them, or both.

Since we are talking about complex, multi-level interactions among organizations and individuals, co-existence, in this case, is easier said than done. To start with, we should know how to make our institution operationally effective; we must possess the ability to provide user-oriented services. It is often the case, however, that the true value of our services is in the eye of the beholder. It is judged by the consumers of information services and not by funders of the funded. How can we claim that our libraries uplift the general citizen’s quality of life when most do not even consider the library in information-seeking situations? We must advertise ourselves and our services, otherwise we run the risk of becoming superfluous and expendable.

These plans for action encompass numerous aspects of advanced communication, management, and behavioral sciences. How many among us have sufficient theoretical knowledge in these areas to provide a solid basis of innovation? We have talked about the technology-intensive characteristics of the post-industrial society. How many of us possess sufficient knowledge in pertinent areas of science and technology and their applications in information services? Surely, the ever-increasing pace of
new developments in these areas has rendered our earlier professional education inadequate. The need for continuing education is self-evident: this education is absolutely essential if our expertise is not to become obsolete and withered. Besides continuing education and self-enrichment in our techniques through a cross-fertilization of ideas and knowledge from diversified subject disciplines, information managers must also develop their staffs’ competency in management, organizational and human psychology, economics, and other pertinent areas. If we meet these challenges, fulfill these responsibilities, we can reap the fruits and “golden opportunities” that are implicit in the 80’s. For it will be in our power to transform the conventional library, doomed to a diminishing role in a technology-intensive society, into a new and better “library” with a dynamic and active role as a viable and useful component of the information transfer system. Whatever the needs our environment and the library users call for, we as information professionals can provide the needed services, whether they are community- and consumer-based information services tailored to meeting personal needs, or any others. We can, and indeed we must, be equal to the task awaiting us in the 80’s.

Thus, in the coming decade we have many more opportunities than in earlier periods to learn from interdisciplinary fields, to practice and experiment with what we have learned, and to interact actively with the society as a whole.

**Education and Research**

Given the information environment of the 1980’s as described earlier, the broadening of the field must have serious consequences for education and training.

We discussed the need for a theoretical base of innovation. It is high time for library training to move beyond a heavy emphasis on practice at the “how” and “what” levels of education to
that of theory: our educations must also ask “why?” Only by probing the “why,” will we be able to generate innovation and ideas and evolve new systems to meet new challenges. The broadening of the information field requires us continuously to alter and expand our curriculum and broaden our knowledge base through the study of other fields. The knowledge base of information professionals should include greater attention to management, communication, and behavioral sciences; to computer sciences and new technology; to problem-solving tools, such as statistical methods and problem-oriented research methodology. Our library school curriculum must be the result of constant change and evolution.

While I also consider libraries a single part of a larger whole, I take issue with those who consider “library” a dirty word and advocate breaking away from the concept of a library. As a traditional base, we should not discard what we have attained. It is something on which to build and improve, so that our future professionals can work with other professionals in the overall information infrastructure effectively and in harmony.

It is unnecessary for the educational programs of library and information sciences to aim at the training of a highly and purely technological staff of information workers, such as computer operators, programmers, and media production staff. Our educational goals and objectives must be clear, and our target groups must be well-identified by the types of work within the large information environment by levels of work involved and by specialization. I see this as both a responsibility to the profession and an opportunity for library and information science educators. It is surely our responsibility to educate the coming generations of our profession to meet the challenges of the future sufficiently. It is also our investment. Through the process of constructing new dimensions of an educational curriculum, we are intellectually richer through the cross-current of exterior disciplines. Our professional world becomes more exciting and more versatile because of the additional opportunities in the interdisciplinary
areas.

I alluded earlier to the need for information practitioners to pursue continuing education. Educators will undoubtedly carry a heavy burden in this area. While the expanded curriculum and program can always be considered opportunities for continuing education, short-term offerings (ranging from a one-day workshop to a multi-week course) should be planned on pertinent topics for a homogeneous target group, utilizing experts from diversified fields and disciplines. The development in this area is the joint responsibility of educators, information professionals, and their organizations. The open opportunities are plentiful for those with innovative ideas and true conviction. Competition is high. We have already witnessed an increase in the continuing education offerings of the information industry. Although charging three to five times more than what is available through regular academic institutions and professional societies, they will continue to prosper if their programs are timely and meet the urgent needs of the information professionals. On the other hand, even no-cost continuing education programs are fundamentally vulnerable if the contents of the offerings are of questionable relevance. Time is money and information is a commodity. Relevancy of information is a salable commodity. There is an economic trade-off point beyond which a continuing education program becomes economically non-viable; however, the real catch is to keep one’s program on the low supply and high demand side of the scale. To do this, we need vision, innovation, and leadership.

Research creates new knowledge. It is, consequently, one of the most effective ways to advance and enlarge the knowledge base of a profession. The sophistication in research activities in a field is also a major criterion used to judge the maturity of a profession. There are plentiful indications that the library profession is rather immature in its developmental stages. Because of this, there are excellent opportunities for those with research capabilities and interests.
The library and information profession is full of basic problems requiring rectification that have been completely neglected. The new dynamic information environment has compounded the complexity and scope of many researchable problem areas. It is time for concrete research plans and actions. Otherwise, academic library and information research will encounter an even greater erosion of budgetary support to the commercial, profit-making research companies.

Availability of financial support for research activities is central to the success of any research project. It is indeed sad to see some government research funding, such as U.S. Office of Education Title II-B Research and Demonstration Project grants, shrink with the passing of time. Library educators, nonetheless, must reevaluate their histories on grant-supported projects. What has been the impact of this research? In what way has this research broadened the knowledge base of our profession? How well have the results of this research been disseminated to all interested professionals?

While one area of research funding is shrinking, others have continued and even enlarged their programs. Both the National Science Foundation and the National Library of Medicine have substantial amounts of grant money available for information-related research. Have our researchers taken full advantage of these opportunities?

Putting the funding situation aside for a moment, we should also ask whether our researchers have the devotion and commitment to conduct reflective inquiries independently of support. Research requires time, energy, concentrated attention, commitment and devotion. Our forebears frequently were able to carry out significant research projects in isolated situations with little or no assistance. Have we been able to produce any worthwhile research under these least desirable situations? Do we have more difficulties in terms of research than those of other matured professions? Perhaps we do. It has been clearly observed that there is a lack of research interest in our profession and of skilled
research personnel. Many mature professions, such as the core fields of science, use the majority of their annual and mid-year meetings for the reporting or disseminating of new research results and general interaction with other researchers. Most of our professional societies’ annual meetings, including those intended exclusively for the library and information science educators, sometimes allow no significant program or no more than one and one-half hours during the whole meeting for the presentation of as many as six research reports. I remember telling my husband recently about one such experience, and his response, as an active scientist, was, “You must be joking. How does your field survive?” I believe that we should constantly ask ourselves this question. I also believe that educators should shoulder greater responsibilities in this area.

International Information Transfer

I have discussed the information environment of the 1980’s in the United States. However, one must keep in mind that, in this modern world, it is neither feasible nor desirable to live in isolation in one’s own geographical corner of the international community. Since communication and other new technologies have developed to such an extent that the human world has closed ranks and is now intertwined as a living unit, we are no longer as sensitive to distance, or as limited by it. Its imposed distinctions on people, countries, and races have begun to recede. Our life is constantly affected by happenings in other parts of the world. Now more than ever, “no man is an island.” We will see the increase of all forms of international traffic including that of information transfer. While there are many policy issues facing us, some of which have been clearly brought out at the WHCLIS, I still see this as an area where there will be “golden opportunities” for information professionals.

In the past few years, I have had the great fortune to make
several trips abroad, including an around-the-world research trip visiting selected scientific and technical information centers. Each time I was greatly enthusiastic about the possibilities of sharing and cooperating in information work with other developed countries. I also felt strongly the responsibility and challenge of working with our colleagues in developing countries. While the opportunities are great and diversified, I want to add a word of caution. As professionals in a gifted and wealthy nation, it is our duty to assist our counterparts in developing countries in training their own educators so that they can be the future leaders in information work in their own countries and develop appropriate information systems tailored to the needs of their own people. This is an essential point. Americans have frequently been accused of an insensitivity to foreign needs and of forcing their particular and specific professional preferences on situations in developing countries when an alternate solution is really called for. We must remember that we can assist information professionals in developing countries to greater informational development, but we must never skip the transitional steps. Furthermore, the information situation in less developed countries must match all the technological and social developments of their environments. Any discrepancy between these two will result in total and complete failure to create any service whatsoever.

Career Alternatives

I have so far addressed many opportunities in the 80's for library and information practitioners, educators, and researchers. Many of you in the audience are students, representing the future generation of our struggling profession. You are not unaware of the job market for new library school graduates. My comments on the information environments in the 80's may have disillusioned you about your professional futures. Last fall when I commented in one of my speeches about the insignificant role of
libraries in meeting information consumers' needs vis-a-vis the roles of other information providers, several concerned library school professors challenged me after my talk and expressed their concern that my comments would be demoralizing to the eager and hopeful library school students in the audience. I disagreed. I felt then, and feel now, that the best tactics in our fight for a future should always begin with an accurate, no-nonsense assessment of our own situation and strength and a thorough understanding of our competitors' advantages and capabilities. To point a rosy and cheerful, but false or unrealistic, picture of the future for our students is, in fact, the greatest disservice we can do them. I can remember that several students in the audience then stood up, publicly endorsing my view. I hope that I can achieve similar purposes in my presentation today. For the world we live in is tough and competitive, but offers unlimited challenges and opportunities. You can be successful if you are innovative, willing to take risks, calculating your resources and maximizing your strengths. You have to be efficient, extroverted, and thoroughly dedicated to innovation in meeting your customers' needs. Library work is part of your work context, but you should never deprive yourself of new career development. Your subject specialization, working background, and personal preferences can be put to use whenever your opportunities are there, in numerous alternative information careers such as librarians, information managers, information consultants, information systems analysts, media specialists, information marketing specialists, microform technologists, record managers, data base managers, computer data base researchers, abstractors-indexers, technical information writers and editors, library and information science educators, information training specialists, information brokers, library vendors and jobbers, and information business entrepreneurs. The opportunities of the 80's are plentiful. Instead of limited career paths, you should find yourselves confronted with multiple alternatives. You'll agree with me that, with all its ups and downs, the information field is still an exciting and significant one.
Twenty years ago, I was a graduate student in library science here at The University of Michigan. My husband-to-be was a Ph.D. student in nuclear engineering. Professionally, we had little in common. Library science and nuclear engineering were very different and totally distinct then, in content and study. Twenty years later, as professionals on both sides of the information fence, we—he as an information generator and consumer, and I as an information intermediate—are working side by side as a team in full partnership. My career went through an exciting period of transformation. I look at it like a big circle that can be sliced into multiple pieces. These pieces are my work as librarian, library administrator, educator, researcher, consultant, author, and others. In each area of my work, I have become a perennial student, constantly learning new things from both library and non-library fields and applying them in each area whenever I see fit. Thus, in my own humble way, through a process of continuous learning, my circle of knowledge has grown and become rounder and fuller.

Earlier, I discussed my attitude toward information professionals breaking away from libraries and expressed why I think this would do more harm than good. Another reason I feel this way could very well have something to do with my upbringing. There is an old Chinese saying, “When one drinks the water, one should think where the water comes from.” Whatever the “golden opportunities” lying ahead of us in the 80’s, we must always remember that they are very much a by-product of the foundation-laying work of our forebears, the giants of our profession in those early days of American librarianship. Now, in the 80’s, it is our turn to build and to grow. Cognizant of our heritage and eager for the future, we must meet the challenges and capitalize upon the opportunities of the coming decade. Let me close my speech on that note. For whatever the satisfaction and joy my professional career has brought me in the last two decades, and will bring me in the next two, I will always remember that my career grows and continues to grow from the outstanding pro-
fessional education I received here at The University of Michigan. Thank you very much.

References

Golden Opportunities in the 80's
