Foreword ...

by *Bil Stahl*, Guest Editor

The evolution of information technology has been constantly accelerating and increasing in diversity over the past ten to twenty years. This evolution has not been linear, but has many branches, with new offshoots sprouting regularly. Some branches often seem to go in divergent directions from other branches, only to turn and merge with these same branches later.

The development of the personal computer was initially, and in some cases still is, feared by people responsible for operating central computing facilities. The reason for this fear centers around the fact that the personal computer enables people to create isolated islands of information. This, in actuality, has often happened. Many organizations have had to address the problem of controlling where "mission critical" information resides and how it is maintained.

Telecommunications is one of those branches that diverged from some areas of information technology only to return to those areas and play a major role in their development. The initial role of telecommunications was voice and later interconnection of interactive terminals to mainframe computers. As telecommunications speeds increased, telecommunications was used to interconnect mainframe computers to one another. As microcomputers became more common, software and hardware that allowed them to emulate terminals connected to mainframe computers became available. These telecommunications connections between microcomputers and mainframe connections developed into true networks, where the computers connected to them could do much more than simply display what was on a remote system.

Many information technologies have converged to bring us to where we are today and where we are obviously going in the near future. The major development has been the digitization of information. Today virtually all information is, or will soon be, digital. Voice, audio, image, and video are all digital or fast becoming so. One conversion to digital format that is often overlooked is that of telecommunications itself. Modems were needed to convert the digital computer information to the common analog telecommunications systems for transmission to remote computer systems, where the signals were converted back to digital information. Digital telecommunications systems can move larger amounts of information faster than their older analog counterparts. This ability of the digital systems is being enhanced almost weekly. In addition, this increase in speed (usually expressed in megabits per second) and capacity (often expressed in terms of "bandwidth") is coming at lower and lower increments of cost.

As the "highway" over which information travels, telecommunications has become one of the dominant information technologies of the 90s. Not only has it enabled computers to talk to one another faster, but it has greatly facilitated the blending of information technologies. Interactive video conferencing, coupled with collaborative computer software that allows the conference participants to simultaneously work on the same document, is happening today. As the higher speed, larger capacity digital telecommunications systems become more pervasive, this type of "long distance" interaction will become more commonplace.

Perhaps more than any other technology in the past, including the printing press, telecommunications is causing libraries to reassess what they are about. The printing press provided copies of a work to be located on the shelves of numerous libraries. Telecommunications allows for an almost infinite number of copies of a work to be located on users' desks wherever they are working — not only in libraries. While libraries struggle to maintain collection budgets to purchase materials for the library, telecommunications is causing the opposite problem for many libraries – how to keep up with an exponentially growing array of information sources available over the networks!

Computer technology has allowed libraries to perform their tasks in a more efficient and effective manner. While computer technology provided many new capabilities, the library applications were still controlled by the libraries for the most part. Telecommunications, on the other hand, challenges the basic purpose of libraries in acquiring, storing, and dispensing information, because the purpose of telecommunications is also to provide access to information in an environment not limited by space or time. Libraries can only be a participant in the overall telecommunications environment, not its controlling force. Librarians are trying to figure out what their role should be. Current library conferences and literature are filled with telecommunications–related presentations on topics such as: local area networks, distributed processing, client–server architecture, the Z39.50 standard, INTERNET access, and the National Research and Education Network (NREN).

The first part of this special issue of *North Carolina Libraries* on telecommunications addresses the challenges telecommunications presents to libraries. Alan Blatecky, Vice President of MCNC, lays out the challenge from a technological standpoint. Alan is the chief architect of the CONCERT network, which is the most sophisticated network of its kind in the nation. Alan calls for librarians to recognize the paradigm shift in the way information services will be provided in the near future, and to take a leadership role in implementing that shift.

The article by Raymond Frankle, a library director, provides an overview of the challenges many libraries face in trying to address the paradigm shift that Alan Blatecky describes. Ray agrees that this is the direction libraries need to move and that they must do so quickly. However, the ongoing expectations for existing library services, the need to retrain existing staff, and the often chronic shortage of resources are all factors many libraries will have to overcome.

Ken Marks, in his article on developing a technology plan for the library, offers a process to follow in addressing both Alan's paradigm shift and the challenges Ray outlines. This process in not a "magic bullet," but a logical way of making necessary decisions. As Ken points out, these decisions will not be easy.

The second part of the issue contains some practical examples of telecommunications in libraries. George Brett's article provides a transition into this section by describing in general terms the value of network access. George provides references for some "how to" articles, but focuses most of his comments on many considerations people do not automatically think of when they are planning to navigate the networks.

Eric Morgan provides a breezy introduction to the major commercial computer network services that are available and places a special emphasis on their usefulness to libraries. Librarians need to be aware of these resources not only for their usefulness but because a growing number of library users subscribe to one or more of these resources.

Marty Bray's article on the use of DIALOG in a secondary school provides insight to the exposure to telecommunications students in secondary education are experiencing. Marty also describes the role newer technologies such as CD-ROM bibliographic databases and local area networks are having in changing the library's use of DIALOG. In addition to providing ideas for other schools, the article should serve to alert public and academic libraries to the fact that many younger library users will be familiar with telecommunications services.

The bibliography prepared by Jessica MacPhail provides a useful starting point for a number of telecommunications related topics. The articles cited are meant to provide background and to indicate the range of telecommunications related topics. Be aware, however, that it is impossible to provide, in print, an up-to-date listing of citations on telecommunications because the field is changing too rapidly. Even the telecommunications literature, such as *Communications Week,* is often out of date by the time it appears. It is also impossible to provide a comprehensive listing of citations with any breadth of scope, because the literature on telecommunications is perhaps more pervasive than the technology itself.

The telecommunications section ends with a "Point/Counterpoint" discussion by Harry Tuchmeyer and myself on the role of librarians in providing user services for network resources. While Harry and I take very opposite positions for purposes of showing these extremes, both of us could argue any point on the spectrum between the extremes. In fact, this is an issue that every library will have to debate for itself and constantly revisit as the resources available via telecommunications systems continue to grow.

It is my earnest hope that this issue contributes to the understanding of telecommunications that librarians must have. Telecommunications is a diverse and complex field. The purpose of this issue has been, in part, to highlight this diversity and complexity. Telecommunication technologies provide libraries with what the cartoon character Pogo once described as "insurmountable opportunities." We hope this issue will help each reader rationally choose the appropriate set of opportunities.