Introduction

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AS LONG AGO AS THE 1930s, H. G. Wells (1938) proposed the establishment of a world brain. He could not have predicted the existence of specific sources and systems available through the Internet, but his proposal seems, in some ways, finally to have been met. Wells's proposal and the Internet go beyond the centuries-old idea of universal bibliography. Bibliographers of the past, such as Konrad Gesner, would surely be astounded by the capabilities of the Internet, yet some of them would be indignant over the haphazard way it has developed and would be concerned about the low editorial standards of many of the sources it makes accessible. What might take the "universal bibliographers" a time to realize is that the success and rapid evolution of the Internet is due in great part to the relatively disorganized way it has developed and to the practice that has allowed any of millions of users themselves to contribute texts, other data files, collections of materials, and correspondence and to gain intellectual access to them in powerful ways. As is demonstrated in this issue of *Library Trends,* increasing attention is being directed toward both organized intellectual access and quality control.

Some of Wells's (1938) thoughts apply verbatim to the Internet:

> This World Encyclopaedia would be the mental background of every intelligent man in the world. It would be alive and growing and changing continually under revision, extension and replacement from the original thinkers in the world everywhere. Every university and research institution should be feeding it. Every fresh mind should be brought into contact with its standing editorial organization. . . . It would do just what our scattered and disoriented intellectual organizations of today fall short of doing. It would hold the world together mentally. (pp. 20-21)

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Wells saw the world brain as a tool in scholarly communication, presently one of the most heralded functions of the Internet:

> To [the specialist] even more than to the common intelligent man World Encyclopaedia is going to be of value because it is going to afford him an intelligible statement of what is being done by workers parallel with himself. And further it will be giving him the general statement of his own subject that is being made to the world at large. He can watch that closely. . . . He will be able to criticize the presentation of his subject, to suggest amendments and re-statements. (p. 24)

Likewise, and in response to Wells's proposal, Smith (1941) agreed that "in a way characteristic of the spirit of the whole, the Living Encyclopaedia would turn the intellectual organisation of whatever unit of society it had come to serve into an organic community activity rich and joyous with the spirit of mutuality" (p. 60).

Concerned about organization and structure, Wells suggested that an Encyclopaedia Society be formed to survey the available material, which he considered to be in "a state of impotent diffusion" and to assemble authoritative subject bibliographies, perhaps even a master bibliography, and to form a general editorial board and departmental boards (pp. 27-28). At the same time, he proposed that the project represent the entire world:

> So that while I believe that ultimately the knowledge systems of the world must be concentrated in this world brain, this permanent central Encyclopaedic organization with a local habitat and a world-wide range . . . nevertheless I suggest that to begin with, the evocation of this World Encyclopaedia may begin at divergent points and will be all the better for beginning at divergent points. (p. 74)

Smith (1941) elaborated by suggesting that, in order to avoid the destruction of intellectual freedom in such a vast and diverse plan, "the users themselves must in the ultimate be the controllers" (p. 61) in a situation in which contributors would heed the users to a greater degree than they would heed their readers in the traditional publishing world.

Very well aware of the developments of documentation projects in the 1930s, Wells emphasized the availability of a variety of materials for a wide readership:

> It seems possible that in the near future, we shall have microscopic libraries of record, in which a photograph of every important book and document in the world will be stowed away and made easily available for the inspection of the student. . . . The time is close at hand when any student, in any part of the world, will be able to sit with his projector in his own study at his or her convenience to examine *any* book, *any* document, in an exact replica. (pp. 76-77)

Wells's proposal has not been completely realized. He believed that the new encyclopedism "should consist of selections, extracts, quotations, very carefully assembled with the approval of outstanding

authorities in each subject, carefully collated and edited and critically presented" (p. 20). While there is certainly a large and growing mass of texts and other sources, they are not always carefully assembled; uneven or no attention is given to textual quality, and subjects are not systematically represented. Further, Wells suggests that the system "would not be a miscellany, but a concentration, a clarification and a synthesis" (p. 20). As it now stands, the Internet—arguably for the better—is a monumental miscellany, is regularly diluted, is by no means clear, and synthesizes nothing.

Many people consider the Internet to be a living, growing, world brain-like organism with a life of its own. Upon reflection, and as the following articles indicate, it may well be living and growing, but its life, which is not self-sustaining, depends on many factors. We know its health depends on the existence of conscientious hosts and users; we know less about the future of its political, economic, educational, social, and cultural life. The need for research related to electronic networking and networked resources is manifold. It is important to develop storage, retrieval, and communications technologies. It is as vital that we understand the organization of the networks themselves as it is to come to terms with the range of sources present on them. There exists a social imperative for us to manage the Internet and its successors within the contexts of its economic and political environments. Likewise, we are obliged to understand the related issues of accessibility to networks. Most of these needs fall into the categories of applied and theoretical research. Several journals, including *Internet Research: Electronic Networking Applications and Policy,* reflect the perceived need for serious attention. Also needed are perceptive examinations from historical and philosophical perspectives.

Some of these problems are addressed in this issue of *Library Trends,* which is intended to present to the general information community research concerned primarily with external research networks. Several major aspects of the Internet and networked resources are addressed: accessibility; organizational problems; policy; educational issues; library and other applications; evaluation; and the potential of networks and networked information as aids in research.

Two articles focus on the evaluation of networks and the resources available through them. In his article about the assessing of, and planning for, networked information services, Charles R. McClure suggests the use of several user-based data collection and evaluation techniques.

The Internet and its future incarnations are widely perceived to be of great educational potential. Tschera Harkness Connell and Carl Franklin survey broad and fundamental issues associated with the existence of networks in educational contexts. Among other topics, they point out problems of network use in classroom and library settings, difficulties of access to the Internet, and the role privatization may have in the future. A study by Constance Wittig and Dietmar Wolfram demonstrates the value library educators place on electronic networking and the roles it should play in library science curricula.

Two articles discuss library applications of the Internet. Diane K. Kovacs, Barbara F. Schloman, and Julie A. McDaniel, in their contribution concerned with the use of Internet resources in library reference services, address several issues that, while applying to other electronic and print resources in predictable ways, illustrate some of the fundamental problems the Internet presents. Yuan Zhou suggests a three-phase approach to collection development that will gradually accommodate all forms of scholarly communication and take advantage of the Internet and commercial external networks.

A major concern shared by proponents of networks and outside observers lies in the disparity in access to the Internet and other networks that exists among different segments of the population. Judith J. Senkevitch and Dietmar Wolfram survey important issues of networking technology in rural libraries and suggest a model for improving accessibility.

The Internet will continue to be useful in many research areas, two of which are surveyed in this issue. Susan Hockey, who has long been concerned with the availability of high-quality electronic texts in the humanities, addresses several related and fundamental issues, including the creation, markup, use, documenting, and cataloging of primary source texts, which are increasingly available through the Internet. Last, in order to provide an understanding of the use of networking in a technical (rather than a scholarly, scientific, or educational) environment, Ann P. Bishop has examined several major issues concerned with the varieties and uses of network applications in aerospace engineering.

One of the major difficulties in coming to terms with the Internet, its growth, and its future lies in the conceptualization of something we cannot see. Cultures have confronted knowledge and systems of organizing knowledge in different ways—not all of them easily visualized—but the recent development of electronic information storage and retrieval methods and communications technologies have created a seething and growing organism. It is supplied with energy from thousands of power plants; its contents and functions result from many thousands of external stimuli. While certain advances

have recently been made, including improved means of intellectual access to Internet sources such as gopher systems, keyword-searching capabilities such as "Veronica," and the National Center for Supercomputing Applications' hypertext access tool, Mosaic, much remains to be done before the whole enterprise will be able to be used intuitively.

Not covered in this issue are the basics of Internet access and use. For such information, and for general introductions, see Krol's (1992) book (a new edition is planned) and Kehoe (1992), to name the oldest and best known. At least two book-length directories of Internet sources exist in paper form (in addition to many lists and finding aids available in other books and within the Internet itself)—Braun (1994); Rutten, Bayers, and Maloni (1994). Several guides for new users, which also serve as reference works for those with experience, have been published very recently to meet the increasing demand—Badgett (1993); Dern (1994); Falk (1994); Gardner (1993); Hahn (1994); Hardie and Neou (1994); LaQuey (1993); and Marine, Kirkpatrick, Neou, and Ward (1994). For individual users without institutional connections, Estrada (1993) and Gilster (1993) have provided guides. To these will be added many more in the near future. Several works for network administrators have recently appeared, including Estrada (1993), Quarterman and Carl-Mitchell (1994), and Rose (1994). Of interest to new users may be some of the hundreds of introductory or popular treatments to be found in magazines and newspapers, which can easily be found in standard indexes.

The contributors to this issue as well as many other researchers, policy-makers, educators, and practitioners have forward-looking, pragmatic attitudes about the future of the world's information infrastructure. Likewise, Wells was realistic and not merely fantasizing about an encyclopedic project from the world of science fiction. He foresaw the necessity for a new large-scale system in the same sense as we do:

> And for me at any rate this [prediction] is no Utopian dream. It is a forecast, however inaccurate and insufficient, of an absolutely essential part of that world community to which I believe we are driving now. . . . I have been talking of real intellectual forces and foreshadowing the emergence of a vital reality. I have been talking of something which may even be recognizably in active operation within a lifetime—or a lifetime or so, from now—this consciously and deliberately organized brain for all mankind. (pp. 79-80)

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