TOWARDS ELECTRONIC JOURNALS:
REALITIES FOR SCIENTISTS, LIBRARIANS, AND PUBLISHERS

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In 1994/95, F. W. Lancaster invited the authors to write two articles for a special issue of *Library Trends* concerning electronic publishing. In preparing these articles, it became apparent that much of the literature about electronic publishing was based on opinion and speculation with little data to support the many conjectures that were being made. Furthermore, a great deal of suspicion and antagonism was building among journal system participants based on this inadequate information and data. Moreover some of the studies we performed seemed to contradict some things that were being said about scholarly journals and electronic publishing.

Over the past thirty years, King Research, and more recently the University of Tennessee's School of Information Sciences, have performed more than 100 studies (many of them proprietary) that produced information and data that shed light on the roles played and the contributions made by scientists (as both authors and readers), publishers, and libraries in the scholarly journal system. These studies included statistical readership surveys of 13,591 scientists conducted from 1977 to 1998 for the National Science Foundation, journal publishers (e.g., *Science*, *Journal of the National Cancer Institute*), and thirty-two organizations such as the National Institutes of Health, AT&T Bell Laboratories, Oak Ridge National Laboratory, and the University of Tennessee. Another study tracked the characteristics of a sample of 715 scientific scholarly journals from 1960 to 1995 with adjustments for births, deaths, and twigging. Finally, a number of our studies involved in-depth cost finding in libraries and, to a lesser degree, in publishing operations.

We felt that the analysis of these data coupled with other research findings would help journal system participants (i.e., publishers, scientists, libraries, and their funders) to understand one another better. In particular, knowledge of the ways other participants process and use scholarly information, their contributions to the journal system, and their motives and goals can assist each participant in making more informed decisions concerning electronic journals in the future. To assist in this effort, we obtained a Steven I. Goldspiel Memorial Research Grant from the Special Libraries Association to write this book and to present the results in other ways.

In this book, we have assembled data and information that help clarify the following participant issues and questions:

Scientists. How do scientists spend their time communicating and in other activities? What are the trends in scholarly article authorship and readership? What motivates scientists to write and read? How much does it cost them to write and read? What factors are considered in choosing journals in which to publish and to which to subscribe? How do scientists identify the articles they read, and where do they obtain them? What are the consequences of reading scholarly articles? What are the trends in reading and information-seeking patterns?

Libraries. How extensively and for what purposes are libraries used by scientists? How do libraries contribute to the use, usefulness, and value of scholarly information? What library services provide access to scholarly articles; how much are they used; and how much do they cost? How much does it cost in scientists' time to use these services? What are the trends in library services, their use, and their cost?

Publishers. What are the trends in number of journals published, size of journals, price, and circulation? How much does it cost to publish scholarly journals, and what factors affect these costs? What factors affect individual (personal) and institutional (library) demand, and how much is demand affected by price changes? What are the financial considerations such as start-up costs, cash-flow requirements, and risks? Are commercial publishers making an unreasonable profit?

Ultimately answers to these issues and questions also help address issues concerning electronic journals:

Electronic Scholarly Journals. What are the forms of electronic journals? What factors inhibit or are of concern to each of the participants: publishers, libraries, and scientists? How much should electronic journals cost publishers, libraries, and scientists? How will electronic journals be priced? What are the overall implications of electronic journals to publishers, libraries, scientists, and their funders?

Abundant evidence is provided concerning these issues and other questions from the authors' data as well as review of over 700 other publications

We also provide a brief history of scientific scholarly journals and the evolution of electronic scholarly journals. The latter is somewhat colored by our own involvement in electronic publishing in the 1970s and beyond.