

Preface

The formal scientific scholarly communication system that emerged 350 years ago changed at a slow pace until the last few decades, during which we have witnessed a tremendous state of transformation over a relatively short period. During this time period, many opposing viewpoints have been heard about the direction of the scientific scholarly communication system. The call for information to be freely and openly available is heard alongside the equally strong desire to profit from it. The well-established subscription-based journal publishing model for sharing scholarly information steadily evolved, but increasing subscription rates made many stake holders of scientific information unhappy. Voices of resistance were heard and the open access movement was born, promoting the norms of free and unrestricted access to scientific knowledge. Although the open dissemination and access to scientific information would ensure greater expansion of the knowledge base and enhance scientific progress, there are critical questions pertaining to the economics of open access publishing as well as other issues unique to unrestricted access to scientific information.

Data is considered the foundation of science, and there is growing interest in making scientific data readily accessible. The quest for “open data” is taking shape in parallel to the open access publishing movement, which will revolutionize the way science is documented. Advances in technology have made data collecting, archiving, sharing, and accessing more feasible. Although the advantages of scientific data sharing are increasingly acknowledged, it has not been adopted equally across scientific disciplines due to a variety of reasons such as the cost involved, culture, lack of data management skills, or technological difficulties. Then, there are issues unique to some types of scientific data that require an understanding of ethical and social factors, privacy, and safety and security concerns when openly sharing it.

The idea of democratization of scientific knowledge, one of the facets of the “open science” movement, is gaining attention within many scientific communities, and the benefits of sharing scientific knowledge are almost universally accepted. At the same time, the importance of transforming scientific discoveries into technologies benefiting the society at large has been similarly acknowledged. Two

contradicting ethos—the free flow of scientific information and the commercialization of scientific discoveries—have become a topic of spirited debate, which demands the attention of the scientific communities as well as the society at large.

The astounding rate of technological advancement not only shapes the way we disseminate, share, and access, but also assesses the quality of scholarly information. Quantitative tools facilitated by computer and communication technologies are combined with the traditional pre-publication peer-reviewing in measuring the impact of scientific research. While discussions and conscientious debates to improve existing time-tested measures persist, the pursuit of developing better and more efficient means also continues. There are questions not only about the effectiveness and reliability of assessment methods but also about the efficiency and the time it may take. Is faster better when assessing the quality of scientific research, and if so, at what cost? In addition to measuring scientific quality, should we also be determining the impact of science on society? And if so, how?

The changes in the scientific scholarly communication system are varied and complex, and the numerous participants involved in the debate about its future direction have different opinions. Scientists, probably the most important participants in this discussion, spend a great deal of time and effort to stay current in their respective scientific fields but may fail to stay current regarding the changes in the scholarly communication system. An understanding of the complex nature of these changes will enable them to more easily navigate this evolving landscape when seeking research funding, publishing their work, and managing issues related to their career enhancement. Beyond mere understanding, they must become advocates for the future of scientific scholarly communication—one that is inclusive and sustainable. This requires a sense of responsibility for shaping its future direction, not simply watching it unfold at the hands of publishers and commercial entities whose agendas may be at odds with the public good and the expansion of scientific knowledge.

The objective of this book is to provide scientists, science educators, university administrators, government entities, research funders, and other interested groups with an overview and critical analysis of historical and current developments and ongoing discussions regarding several important aspects of the scientific scholarly communication system based on thorough examination of the published literature on these topics. Therefore, we believe this book will provide an incentive for readers to become informed, join the conversation, and become active participants in helping transform the future of the scientific scholarly communication system that anchors the scientific endeavor, benefiting all of us and the environment in which we live.

Murray, KY, USA
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Pali U.K. De Silva
Candace K. Vance

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De Silva, P.U.K.; Vance, C.K.

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