

# Chapter 43

## Research and Web 2.0: Technology, Innovation, and Actor Constellations

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### ABSTRACT

*The scientific publishing industry has witnessed a plethora of innovations across the life cycle of writing, publishing and archiving of scientific journals. Open access is only the visible tip of an iceberg that contains new players and new services and modes of publishing—which span from new review processes, online citation indexes and social media tools—that have become available over the past 20 years. One might have the impression that disruptive innovations are underway and that many of the well-established themes of digital transformation, such as business model and service innovation, disintermediation, ProSuming and new pricing models, have had a profound impact on the market of scientific journals. Nonetheless, the commercial academic publishing houses (the incumbents) so far have not only successfully defended but even extended their market position. By categorizing the innovations underway and relating them to the constellation of actors in this market, the authors reflect on and try to explain the lasting influence of traditional publishers in the market.*

### INTRODUCTION

Digital scholarship has seen many changes in the last two decades as technological innovations have transformed almost every aspect of how academics do research, publish, cooperate and teach. This is especially true when focusing on the research side of scholarship (Weller, 2011; Economist, 2008). The contribution and share of scholars in the publishing process has significantly increased, so much so that a growing part of the infrastructure for academic writing, such as archives and tools for compiling literature and references, is open access. Open access journals facilitate reviewing and online publishing. All

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this can be done without any support from commercial publishers, which has been highlighted by social and political claims (e.g. the open access movement). Such changes are highlighted by concepts such as Science 2.0, e-research, open science and citizen science (Waldrop, 2008; EU Commission, 2015).

From a business ecosystem point of view, the beginning of this century has seen the rise of new actors and new intermediaries which are providing both innovative forms of traditional services and new technology-driven services. Many of these innovations have been created and offered by new entrants to the industry. The sector is indeed benefiting from functions or services which have migrated from other sectors. As a result, a number of different actors that provide an increasingly diversified set of services nowadays support the life cycle of scientific publications. While such initiatives grew rapidly, the sector is still heavily influenced by the traditional ways of publishing and evaluating scientific knowledge and reputation. Indeed, despite the fact that the growing number of innovations allows for new forms of scientific publishing, scholars and academic institutions seem to be quite conservative in adopting them (Nicholas et al., 2015; Ponte & Simon, 2011). In parallel, traditional publishers maintain a significant influence on the sector by retaining a strong market position, especially when focusing on the scientific journals segment of the market.

The aim of this work is twofold. First, the authors try to categorize the fast-changing scientific knowledge production practices and the set of innovative services provided in the sector by old and new actors. The purpose of this exercise is to reconstruct the key elements of the transformation and to analyze if and how the services provided by the incumbent publishers have changed. Second, the authors reflect on and try to explain the lasting influence of traditional commercial publishers in the market of scientific journals, where researchers are both producers and users of scientific knowledge. As such, while the waves of change do not show a clear direction for the future, the authors try to depict possible future scenarios.

## THE MODERN SCIENTIFIC PUBLISHING INDUSTRY DISTILLED

Three main steps constitute the core of academic publishing: research and documentation, evaluation of the results and publication of the results (Björk & Hedlund, 2004; Garvey & Griffith, 1972). Once the research process is completed, authors write their manuscripts and submit them to the publishers. After receiving the manuscript, publishers usually delegate editors (other researchers) to review the manuscripts or to identify peer experts who evaluate the quality of the scientific content. Depending on the reviews, the manuscripts are revised and resubmitted, rejected or accepted. If the manuscript is accepted for publication, it is published in journals, proceedings or books.

From a historical point of view, the publication of scientific journals dates back to the seventeenth century with the birth of the first two scientific journals: the *Journal des Scavans* and the *Philosophical Transactions of the Royal Society of London*. Before that, scientific communication was based on correspondence between scholars. There are several reasons which explain the establishment of scientific journals:

1. Avoiding duplication of scientific activities and results;
2. Setting the priority of scientific findings; and
3. Checking the quality of research (Larivière, Haustein, & Mongeon, 2015).

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