

2020: A Publishing Odyssey

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The information industry landscape is changing at a rate that would have been unimaginable just a few years ago. As the digital revolution continues to unfold, many existing publishing enterprises will either cease to exist or be transformed into a form that is virtually unrecognizable from their current one. Three factors will shape the future of scholarly journal publishing: the success of open access versus toll access business models, the survival of the journal brand on the author side, and the survival of the journal brand on the reader/librarian side. Whether you find some of these possible futures desirable or catastrophic depends on who you are.



AHMED HINDAWI

Hindawi Publishing
Corporation

I will start with a quick overview of what is happening in some of the traditional media industries and the significant challenges they are facing. I will try to make the point that scholarly journal publishing is immune from most of these problems. Nevertheless, journal publishing is going to evolve over the next few years. I will present the three big changes that I believe will shape the future of journal publishing, the main drivers behind these changes, as well as their most important consequences. I will then offer some closing remarks.

There is wide agreement in our industry that publishers need to reassess the value they provide in the new digital era. This is very well captured by a recent quotation by Clay Shirky:

"It makes increasingly less sense even to talk about a publishing industry, because the core problem publishing solves – the incredible difficulty, complexity, and expense of making something available to the public – has stopped being a problem."

I think there is a lot of truth in this sentence.

Let us look at some of the traditional media industries.

Newspapers and magazines went online a few years ago. They embraced the digital revolution. Not only did they go online, but they became freely available online, which is causing them serious financial problems. In the print era, newspapers used to have two revenue streams: reader-side payments and advertizing revenues. In the free online world, they lose their reader-side payments

and their advertizing revenue drops from about 10 or 20 cents per page impression to about a tenth of a cent per page view. One revenue stream is completely gone and the second is downsized by two orders of magnitude. No wonder the newspaper industry is in deep trouble.

But the decision to become freely available online was not an irrational or incompetent decision. It was rather an economic inevitability. Newspapers were forced to become freely available online. The underlying reason for this economic inevitability is the fact that they produce highly undifferentiated content. Almost every news story you might be interested in is covered by thousands of news sources. The simple economic fact that there is no marginal cost in serving an additional reader means that producers of undifferentiated content will engage in a price war, a race to the bottom, where the price becomes literally zero.

The Wall Street Journal (WSJ) was able to escape this fate and keep its reader-side payments precisely because it produces differentiated content. If you want to read the financial analysis presented in the *WSJ*, you cannot substitute it with something else. In addition, it also helped the *WSJ* that its subscriptions are usually considered a business expense paid for by the readers' organizations rather than by the readers themselves.

Let us consider another sector: trade book publishing. Trade book publishers are just starting to embrace the digital era. The Amazon Kindle bookstore, the Sony bookstore, and the Google Book Search, which is quickly becoming the Google

Bookstore, all have hundreds of thousands of digital books, some for sale, and some for free.

With the digital revolution come a number of challenges for book publishers. First, publishers are naturally less needed in a world with no print and distribution. Second, book publishers, like Random House, HarperCollins and Hachette have B2B brands rather than B2C brands. Authors publish with them because they can get the authors' published books into Barnes and Nobel, Borders and the other bookstores. But with an infinite digital bookshelf, anyone can get into the new digital bookstores. Third, publishers are going to face new competition from 30 million out-of-print books. These books are coming back from the dead to compete with newly published books for readership. The long tail will compete with the short head for the truly scarce human attention. Fourth, the marginal cost of digital distribution is zero, so prices are going to fall because of price wars between book publishers, especially for interchangeable books. The digital environment simply cannot support undifferentiated content. Fifth, demand is not going to go up; people are not going to read more books as these books become increasingly cheaper.

The music industry is experiencing similar challenges. In addition, the music industry is suffering from serious piracy issues; issues that will soon be faced by book publishers as well.

Now let us turn our attention to scholarly journals. Scholarly journal publishing is largely immune from the problems faced by other sectors of the publishing industry. First, they publish highly differentiated content. If you need to read a particular scholarly article, you cannot replace it with another equivalent article. There are no equivalent articles. Having access to *JAMA* is not a substitute for having access to *The New England Journal of Medicine*. Having access to *Physical Review* is not a substitute for having access to *Nuclear Physics*. Second, journals are being subscribed to by universities and research centers. They get paid by the readers' organizations rather than by the readers themselves, even more so than the *WSJ*. Third, piracy is not an issue in journal publishing for a number of reasons, including the fact that librarians do respect the copyright law and will not promote piracy within their own organizations.

In short, scientific journal publishing is safer and more secure than most of the other areas of the publishing industry. However, it will have to

evolve in its own way with the digital revolution. The biggest three changes that I believe will shape the future of journal publishing are: first, the success of the open access versus toll access business models; second, the survival or downfall of the journal brand on the author side; and third, the survival or downfall of the journal brand on the librarian side.

There might be other changes in the future, but I do not think these other changes are either likely to happen or will have a significant impact on journal publishing. For example, I do not think scholars will change the current form of the journal article as their preferred unit of scholarly communication. Neither do I think that their use of blogs and wikis is going to replace or significantly impact the traditional journal publishing.

Let us look at the drivers for these three big changes.

What are the drivers behind a shift from the current toll access business models to open access business models? First, there is the recognition by scholars, and more importantly by research funders and policy makers, of the merits of open access, the promise of giving every researcher on the planet free online access to the whole journal literature. Second, the serials crisis and the pressure on the library budget make it very difficult for toll access publishers to expand their toll access journals or launch new journals under the toll access model. This was one of the principal reasons OUP converted their flagship journal *Nucleic Acids Research* to open access and was the principal motivation for Hindawi to switch its full journal collection to open access a couple of years ago. Finally, green open access is going to push publishers towards gold open access as a more financially viable and secure business model.

The shift from toll access to open access is the first of the three big changes that may happen in the next few years. The second is the potential downfall of the journal brand on the author side. The most important driver for this change is the availability of highly accurate bibliographic and citation databases such as Scopus and Web of Science coupled with better ways to uniquely identify authors. Using these databases, it is possible to come up with article-level and, more importantly, author-level metrics that can replace the journal impact factor.

'I am Not a Scientist, I am a Number' was the title of a recent editorial in *PLoS Computational*

Biology, an article among many published in the last few years arguing for moving beyond the current journal level impact factors in evaluating the research output of individual researchers, research groups and research projects.

The *h*-index is already built into Scopus as well as the ResearcherID.

These citation databases allow us to disaggregate the journal for the purpose of evaluating the publications of an individual researcher. A key component to the accuracy of this process is the ability to identify authors using unique identifiers.

Once we can uniquely identify authors within an accurate citation database, we can compute all sorts of metrics, the *h*-index, the *g*-index, and also what we may call the 'author impact factor'. The impact factor of the 'Personal Journal of Harold Varmus', for example, is significantly higher than the average impact factor of the journals that publish his work.

Another driver for the downfall of the journal brand on the author side is the rise of post-publication reviews and commentaries, such as those of the Faculty of 1000 as well as those of PLoS ONE, although I believe author-level metrics using citations databases have a better chance of disaggregating the journal for the purpose of evaluating individual researchers.

As we have seen, the journal, as a brand, is under pressure on the author side. It is also under pressure on the librarian side. As more and more of the library budget is committed to a few 'big deals', librarians become unable or unwilling to make their purchasing decisions based on individual journal titles. And the major driver for the big deal is its economic attractiveness for both publishers and librarians. Many libraries can double, triple, or even quadruple the amount of materials they have access to for a modest addition to their current or past spending. Switching from individual journal subscriptions to multiyear contracts that cover hundreds or sometimes thousands of journals is usually the rational decision to make by the publisher as well as by the librarian.

To summarize so far, the scholarly journal is facing three important changes: a shift from toll or subscription access to open access, a downfall as a brand on the author side, and a downfall as a brand on the librarian side. I have tried to articulate the drivers for each and every one of these possible changes. Now, I would like to move to look at the future of journal publishing based on these

changes. Obviously there is a whole spectrum of possible futures based on how much each of these changes will actually take place in the next few years. I would like to present the extreme cases, the possible futures in which one or more of these changes have completely been realized.

There are five possible futures. So, let us go through them one by one.

The first possibility is a world in which none of the three changes actually took place. This is not actually a future, but the near past of the scholarly journal market. I do not need to describe this particular case, as we are all familiar with it. I only want to emphasize one point: the serials crisis is a direct consequence, an economic inevitability, of the combination between the toll access model and the strong journal brand on the author side. Journals have monopolies over the articles they publish while authors strongly prefer to publish in the highest impact journals regardless of their subscription prices. The consequence is the serials crisis.

In the last few years, we have already started to drift away from this world.

The second possible future is one in which journals are still under the toll access model, journals are keeping their strong brand on the author side, but in which big deals have completely taken over most of the library acquisition budget. Small publishers and independent journals will either go out of business or get acquired by one of the few remaining large publishers. This is a future with more consolidations between publishers, higher tensions between publishers and librarians, and extreme pressures on the library budgets. One important fact I would like to stress is that there is no clear market mechanism that prevents a single publisher from completely overtaking the library budgets. The same dynamics that forced smaller publishers out of the market will apply to the smaller publishers of the future, even if those smaller publishers of the future are publishing a couple of hundred thousands articles a year!

It is likely that this future will never be realized, since we are already drifting away from the toll access model towards open access, and I believe open access will look more attractive to many publishers as more and more of the library budget becomes committed to a few large players.

However, if this future indeed falls upon us in the next few years, it cannot represent an end in its own. This future is heading towards what a

physicist might call a 'singularity' where the entire known laws break down. Although it is not possible to predict exactly what is going to happen in this future, something will emerge to break the market transformation from an oligopoly to a complete monopoly. This 'something' is likely to be an external market intervention by research funders or policy makers.

The third possible future is a future in which journals are still under the toll access model but in which authors stopped caring about the journal as a brand. This is a future in which authors know that their articles are going to be evaluated without reference to the particular journal in which they were published. Authors will publish in journals that provide them with fast and professional peer review, high production services, wide distribution, online discoverability, etc. Authors will be much more demanding and publishers will have to work much harder to keep attracting authors.

In this future, there are no bases for a librarian to base his/her purchasing decision on journal titles, since journals will not represent different quality bands in the scholarly literature. There will be no small set of journals that are considered 'must have' or 'core' journals to a particular subject. New pricing schemes will emerge that are largely based on usage and subject areas. And there will be an ongoing market price such as \$1 per download in biology or \$4 per download in mathematics. Publishers will continue to editorially filter their submitted manuscripts, but they will understandably publish all manuscripts that are rigorous, reasonably written, and likely to generate enough downloads to justify the cost of publishing them. With an ongoing market price, the only way for a publisher to be more profitable than its competitors is by being economically more efficient.

What I have just described is simply the commoditization of scholarly journal publishing. It is what happens when consumers of a particular product or service perceive little or no value difference between different brands or versions, which causes a market transformation from monopolistic competition to perfect competition.

The last three futures were all toll access. The fourth possible future is one in which journals are open access but still represent strong brands on the author side. Readers and librarians do not need to subscribe to journals to access their content. In this future, publishers of high-impact journals can demand higher article processing charges. However,

there will be a significant level of competition between publishers, because although journals lack any interchangeability on the reader side, they are much more interchangeable on the author side. In this future, authors will prefer to publish in *Nuclear Physics* at \$3,000 an article than to publish in the *Junk Journal of Useless Physics* at \$300 an article. But those same authors might as well consider or prefer to publish in IOP's *New Journal of Physics* at \$1,500 an article. This market competition will lower the total cost of the scholarly journal system and will ensure significantly higher levels of economic efficiency.

The last possible future is one in which journals are both open access and have lost their brands on the author side. You may call this future 'Commoditization 2.0'.

Publishers will tend to accept most of the manuscripts that are submitted for publication; even if these manuscripts do not have the potential of generating a significant number of downloads. However, publishers will continue to filter submitted manuscripts and publish only those that are rigorous and reasonably written. Their incentive to do that is to get indexed by the major A&I databases. These databases, which are the main reason behind the downfall of the journal brand on the author side, will become increasingly more important in this future, since they will represent the natural place for readers to navigate the scholarly literature.

This is a future in which every journal is a PLoS ONE-like journal, publishing all submitted manuscripts that are rigorous, regardless of their potential impact. Cross-publisher databases and services will help the scholars and the science administrators to navigate and evaluate individual articles and authors.

The five possible futures I have presented are the extreme cases in which one or more of the three big changes have been fully realized. Obviously, only one future is going to materialize and it may be a future that is more complex than those simple five possibilities. Most of the current hot debate about the future of scholarly journal publishing revolves around business models. However, there are other important issues that can and will have significant impact on the future of journal publishing.

Most publishers will understandably dread a future in which journal publishing is completely commoditized. But this is a future that might carry

significant benefits to the society as a whole. Some may argue that such benefits will come at a price that is too high for academics or academia itself. However, the fact that the journal may stop being the primary label of quality does not mean that high-quality, high-impact articles will not be published. They will continue to be published, but will be packaged differently than they are packaged today.

Scholarly journal publishing has many stakeholders including authors, readers, librarians, publishers, learned societies, research funders and university administrators, among others. As with any economic shift, there will be winners and losers. But in any meaningful discussion, we have to differentiate between what is best for a particular group of stakeholders and what might be best for the society as a whole.

However, it is understandable that it is not easy for those who stand to lose the most to be as objective as they should be. This is very well captured by the following quotation from Upton Sinclair:

"It is difficult to get a man to understand something when his job depends on not understanding it."

■ **Ahmed Hindawi**
CEO
Hindawi Publishing Corporation
Nasr City Free Zone
Cairo 11816, Egypt
E-mail: ahmed.hindawi@hindawi.com

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