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# PHYSICS TODAY

## No need for researchers to break the law to access scientific publications

Contrary to a *New York Times* commentary, research papers are becoming more available, and the transition is happening sensibly and responsibly—and lawfully.

By H. Frederick Dylla

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A 13 March *New York Times* Sunday Review commentary carried an enticing headline that asked, “Should all research papers be free?” Well, of course that would be nice. I would like my daily copy of the *Times* itself to be free, but I have a basic understanding of the economics of producing, distributing, and archiving high-quality publications. (For more on the *Times* piece, see *Physics Today* media analyst Steven Corneliussen's summary.)

The *Times* commentary's author, journalist Kate Murphy, began this way:

*Drawing comparisons to Edward Snowden, a graduate student from Kazakhstan named Alexandra Elbakyan is believed to be hiding out in Russia after illegally leaking millions of documents. While she didn't reveal state secrets, she took a stand for the public's right to know by providing free online access to just about every scientific paper ever published, on topics ranging from acoustics to zymology.*

Elbakyan's Sci-Hub website boasts of being “the first pirate website in the world to provide mass and public access to tens of millions of research papers.” Murphy generally framed this illegality as something like heroic. But let's be clear: A pirate who fraudulently obtains more than 40 million article and 1 million books should not be paraded as a hero.

Meanwhile, the publishing community is sensibly and responsibly—and legally—widening access to research papers as a service to science and humanity. Approximately 30% of the existing 28 000 scholarly journal titles and most newly established journals use the open-access business model. In terms of access to the nearly 2 million articles published by those journals each year, the subscription model is still dominant. But there are myriad low-cost or zero-cost options for nonsubscribers to access content. As with my copies of the *Times*, the widening needs to happen in ways that work economically in the challenging, evolving information age.

The scholarly journal article, first reviewed by one's peers and a journal's credentialed editorial team, has been the mainstay of academic communications for three and a half centuries. The enterprise embraced the advantages of the internet in the mid 1990s, shortly after Web browsers appeared and long before most trade publications, newspapers, movies, or music began trying, haltingly, to develop sustainable Web business models.

As with any quality product, somebody has to pay for production. When it comes to scientific publications, access that seems “free” is never cost-free. PhD-level editors at commercial and not-for-profit scholarly publishers laboriously manage peer review and shepherd raw manuscripts into finished, distributed, archived, indexed, and data-minable products. Publishing costs for a single article can be as high as \$5000. Support comes from subscriptions by institutional libraries serving large readerships or from authors paying fees up front.

Instead of turning to Sci-Hub, article users outside subscribing institutions have several legal options. The most obvious is simply emailing the author to ask for a copy. (What author turns away interest in a work?) Most publishers allow authors to deposit accepted versions of their articles on personal or institutional websites or in subject-matter or agency repositories, where the content is typically indexed and available through Google Scholar and other commercial search engines. A low-cost article rental service (DeepDyve) provides content from more than 100 of the largest publishers for fees as nominal as the price of a cup of coffee. Analytics from journal publishers show that fewer than 1 in 10 visitors lack subscription access. Eventually, the open-access model will probably dominate many fields of scholarship. But until a more complete transition is in place, there are plenty of legitimate options beyond dealing with a pirate site.

Scholarly publishers have made it easy for anyone to search and identify relevant articles. They attach digital object identifiers (DOIs) to every article published. Publishers allow this 50-million-article database to be crawled by all the popular search engines, even though that practice also gives opportunities to enterprising thieves.

Three years ago, presidential science adviser John Holdren directed the major US federal research agencies to develop and implement plans to widen public access to publications and data associated with federally funded research. Holdren’s directive was based on recommendations from the multistakeholder Scholarly Publishing Roundtable in 2010. Among the many stakeholders in government and the private sector, the progress has been remarkable:

- Public-access policies have been established for 98% of the activities Holdren targeted.
- A robust article-identification system is in place from Crossref, a not-for-profit organization for scholarly publishing that works to make content easy to find, link, cite, and assess. It’s already tracking more than 11 000 funding agencies worldwide.
- CHORUS, a public–private partnership, is actively assisting the agencies and publishers with implementing their public-access plans.

The way to widen access to scientific publications isn’t to subvert evolving business models illegally. It’s to develop them collaboratively and constructively. And that’s what’s happening.

*Frederick Dylla served as executive director of the American Institute of Physics (2007–15), which publishes Physics Today and 19 scientific journals through its subsidiary AIP Publishing. Dylla worked as a physicist for 30 years at several US national laboratories and in industry. He participated in the 2010 Scholarly Publishing Roundtable and serves on the board of CHOR, Inc, which is working to develop and advance CHORUS.*

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