

Increasing Public and Fair Access to Scientific Findings

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Abstract

Public and fair access to scientific findings is an increasingly important movement for scientists, researchers, and knowledge workers who can put the findings to good use and build upon the scholarly research to innovate. Choosing the location of the digital repository to house the research articles is an essential part of developing an open access policy for federal agencies. Where the journal articles would reside has been a controversial issue between publishers and Open Access advocates. This poster presents the background of the FASTR Act and the analysis of the scientific data sharing issues among the U.S. government agencies and academic publishers. It also proposes and demonstrates a centralized government-funded repository leading to a faster and wider sharing of scientific research, which enables the continued advance of science, stimulates innovation stimulation, and grows the overall economy.

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Introduction

Public and fair access to scientific findings is an increasingly important movement for scientists, researchers, and knowledge workers who can put the findings to good use and build upon the scholarly research to innovate. To increase access to the results of federally funded scientific research, the U.S. legislation has been committed to proposition that taxpayers deserve easy access to the results of scientific findings their text dollars have paid for. John Cornyn, the senator for Texas, and Ron Wyden for Oregon introduced the Fair Access to Science and Technology Research Act (FASTR) in February 2013. According to Schmelzer (2015), the Act would require U.S. government departments and agencies with annual extramural research expenditures of more than \$100 million to make electronic manuscripts of peer-reviewed journal articles based on their research freely available on the Internet within six months of publication in a peer-reviewed journal. Days after the FASTR Act was introduced, the Obama Administration (2013) issued a policy memorandum that requires the federal agencies to develop a plan to support increased public access to the results of research funded by the federal government.

Choosing the location of the digital repository to house the research articles is an essential part of developing an open access policy for federal agencies. According to Lucibella, (2015), some agencies may work out arrangements with academic publishers by maintaining a database of abstracts that redirect users to publishers' systems that host the full text articles. Alternately, other agencies may manage and share the articles by creating their own repositories. With the response to mandated public access to federally funded research, the academic publishers also offer a way to share research data through CHORUS - the Clearinghouse for the Open Research of the United States. Open Access advocates are skeptical about the publishers' intentions because the publishers have always tried to maintain control over access to the journal articles. Where the journal articles would reside has been a controversial issue between publishers and Open Access advocates.

This poster looks into the background of the FASTR Act and analyzes the scientific data sharing issues among the U.S. government agencies and academic publishers. At the end, the poster proposes a centralized government-funded repository leading to a faster and wider sharing of scientific research, which enables the continued advance of science, stimulates innovation stimulation, and grows the overall economy.

Background

The FASTR Act is a bill that would require that federal departments and agencies with annual extramural research expenditures of over \$100 million make manuscripts of journal articles stemming from research funded by that agency publicly available over the Internet. This bill is strongly supported by the American Library Association (ALA) and the Alliance for Taxpayer Access (ATA), and Scholarly Publishing & Academic Resources Coalition (SPARC), which advocated on behalf of legislation that calls for increasing public access to federally, funded research. According to SPARC's descriptions on the Act, the departments and agencies specifically are: United States Department of Agriculture (USDA), Department of Commerce (DOC), Department of Defense (DOD), Department of Education (DOED), Department of Energy (DOE), Department of Health and Human Services (HHS), Department of Homeland Security (DHS), Department of Transportation (DOT), Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA), and National Science Foundation (NSF). According to the bill text, a government agency can preserve the research manuscripts in its own digital archive or in another suitable repository that permits free public access, interoperability, and long-term preservation; each manuscript will be available to users without charge within six months after it has been published in a peer-reviewed journal. The main goal of the FASTR Act is to accelerate scientific discovery and innovation, strengthen the economy, and ultimately encourage job creation. By making the federal-funded scientific findings accessible, the research is available as a public good to all scientists to read and build upon the results.

The FASTR Act would give individual agencies flexibility in choosing the location of the digital repository to house the scientific research articles, as long as the repositories meet conditions for public accessibility and productive reuse of digital articles, and also have provisions for interoperability and long-term archiving. With this flexibility, agencies can coordinate their research articles deposit procedures in different ways. For example, National Institutes of Health (NIH) implemented its mandatory Public Access Policy and has already made the research articles public on its PubMed Central repository. NASA and the USDA are both creating their own full text database based on PubMed Central repository. National Science Foundation (NSF) and the Department of Energy (DOE) also announced their public access policies and will maintain a database of abstracts, which is known as the Public Access Gateway for Energy & Science (PAGES), redirecting users to publisher servers that host the full-text articles. (2015)

Meanwhile, the publishers responded to the FASTR Act by offering a way to share the scientific data with the public through CHORUS - the Clearinghouse for the Open Research of the United States. According to Schwartz (2013), CHORUS is billed as a substantial savings of time and trouble for the funding agencies. It is built on publishers' existing infrastructure. CHORUS directs users to the journal webpage where the article was originally published and allows anyone to access the post-embargo article for free.

Data Sharing Issues

The flexibility that the FASTR Act provides for the agencies in determining the final location of their online archive causes controversy between academic publishers and Open Access advocates on where to store the final manuscripts of journal articles for users to access.

Open Access advocates are skeptical about the publishers' intention on offering CHORUS as a solution to share research data with the public. Harnad (2013), an Open Access advocate, commented that the publishers have already tried to delay the potential benefits of Open Access to research progress by imposing embargoes of six to twelve months or more on research access that can and should be immediate in the online era. Another example of the publishers' control over the access to the research data is that some of the biggest scientific publishers will publish journal articles online quickly, but they might not be published in print for a year. (2015) The stall in printing would cause a year longer delay for the articles to be released to the public. Harnad also pointed how publishers can gain control over both the timetable and the infrastructure for providing Open Access through CHORUS. Other Open Access advocates (2013) believe public access should be provided by researchers and the agencies who mandate and monitor open access provision by requiring deposits in their own repositories, which already exists for multiple purposes.

According to Morrison (2013), who believes the only way to ensure ongoing public access is through public stewardship of publicly funded research, the federal funding agencies have no control over publishers because they fund researchers instead of publishers. It might be a risk to give away public access to commercial publishing because a publisher could potentially be sold to a party from a different

country whose interests do not align with the U.S. public access requirements. An example provided by Morrison ((2013) is Elsevier, a UK-based corporation that reports to its shareholders, not the U.S. public.

In the FASTR Act (2015), it is specifically noted that the research articles need to be made available to the public “in formats and under terms that enable productive reuse, including computational analysis by state-of-the-art technologies.” If the government-funded research articles were hosted in CHORUS, all of the metadata, abstracts and full-text articles would be owned by the publishers. The publishers would have the final right to interpret the articles’ terms of usage, which would cause a conflict with the FASTR Act on “enable productive reuse.” Users would not have permission to reuse of the articles unless the publishers gave them the permission.

Based on the history of academic publishers’ previous support on Research Works Act, which contained provisions to prohibit Open Access mandates for federally funded research, scientific researchers and government agencies have lost the trust in the publishers and are concerned whether the publishers abide by the Open Access requirements. According to Lucibella (2015), some agencies maintain a “dark archive” of the full-text articles for preservation or in case a publisher does not comply with the open access requirements.

On one hand, the flexibility in choosing the location of the digital repository provided in the FASTR Act would cause continued tension between the publishers and the government agencies on where to house the scientific articles. On the other hand, the FASTR’s vague requirements on the repositories and deposited data format would result in a burden of creating a new system or the duplication of agency efforts. The FASTR Act would only require the repositories to meet conditions for public accessibility and productive reuse of digital articles, and have provisions for interoperability and long-term archiving. The agencies would develop their own open access policies and created their repositories based on their own needs. Without any technical guidelines provided, it will be challenging for the agencies to create a repository with provisions for a long-term archiving as required by the FASTR Act. Moreover, there would be collective collaborations needed among all the agencies in order to ensure an interoperable repository. The flexibility in choosing the location of the digital repository and the lack of technical guidance in creating repositories make collaborations unlikely to happen among the agencies and stakeholders.

A Possible Solution

A change can be made by the U.S. legislation to resolve the controversial issue on where the scholarly scientific research articles. The legislation can give the federal agencies the regulatory authority as well as provide funding to create a centralized repository. The agencies will still work on their own public policies, but maintain the master archive of freely available published articles in the centralized repository.

In the FASTR bill, the phrase “computational analysis by state-of-the-art technologies” is used to describe repositories that the agencies can use to house the research articles. Working on a centralized repository increases efficiency in identifying a state-of-the-art analysis and a data-mining tool. Each agency does not need to duplicate the effort to invent or discover different tools in order to reach the same outcome in response to the FASTR Act. The collective collaborations among all the agencies also can ensure an interoperable repository.

According to SPARC, faster and wider sharing of research fuels further advances. In conclusion, a government-funded centralized repository can make the fruits of the scientific research available to the public in a timely fashion. A centralized repository also increases transparency in data sharing and ensures a faster and wider data sharing that enables the continued advancement of science, stimulates innovation, and strengthens the economy.

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