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A Paradigm Shift in Scientific Scholarly Communication: Toward Public Access and Use of Research

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Abstract:

Background: Open access movements have gained significance and evolved to bridge the divide between traditional models of publishing and open access publishing to embrace a paradigm shift in scientific publication.
Objective: This paper examines the 2008 National Institutes of Health (NIH) Public Access Policy mandating open access for research articles funded by the NIH.
Methods: Examining key tenants of the policy, the analytic method used in this study is Norman Fairclough's three-dimensional model for a critical discourse analysis (CDA). The CDA maps the discourse practice and social practice surrounding the development of the policy.
Results: Findings illustrate the tensions between those groups advocating open access and commercial publishers. Discusses the language use by all parties, e.g. around copyright and the meanings and presentation of open access, and explains how policy developed.
Conclusions: Presented with opportunities and challenges, the library community plays a key role in the advocacy for open access, "public good", and copyright. With support from critical strata of the academy and Congress, the library community is a catalyst in the debate over open access.

Keywords: open access, NIH Public Access Policy, scholarly communication

1 Introduction

The emergence of communication processes aided by technological advances continue to fuel the emergence of open access initiatives. Policymakers in the U.S. are increasingly concerned with the use of tax-payer funded research. In 2008, the National Institutes of Health (NIH)

Public Access Policy become a monumental policy, becoming the first U.S. federal agency to legally require results of its funded research to be openly accessible to the public. The passage of this policy marks years of intensive advocacy efforts on the part of the American library community and a broad coalition of allied organizations for open access (English & Joseph, 2008). These changes mark a significant shift that has taken place not only around open access but also around the role of elected officials in defining open access and scientific scholarly communication.

Drafted in 2004, the NIH Public Access Policy proposed a mandate that required NIH-funded researchers to deposit their final peer reviewed research articles to PubMed Central (PMC)[1] within six months of the article publication date. The mandate had three purposes: to create a stable archive of NIH-funded research ensuring permanent preservation, to help the NIH manage its research agenda, and to "make published results of NIH-funded research more readily accessible to health care providers, educators, scientists, and the general public (Miller, 2008). The bill was signed in December 2007 and went into effect in April 2008 with amendments to extend the period to twelve months after publication in response to the influence of powerful commercial publishers (Suber, 2008). The new law requires the final version of the peer-reviewed manuscript to be deposited in PMC as soon as the article is accepted for publication (De Silva & Vance, 2017). This enables the immediate release of its metadata and allows it to be discoverable for other researchers. While the legislative initiative marks a major stride towards open access to publicly funded research in the U.S., the NIH policy remains contested among researchers, commercial and society publishers, librarians, consumer groups, and other members of the community. Through the lens of critical discourse, this paper analyzes the major developments and advocacy efforts that led to the enactment of open access to publicly-funded research at national and international levels.

2 Background

In recent decades, the continued rise of journal subscription prices has placed increasing pressure on academic and research libraries to examine new ways of providing access to resources and information their patrons need in order to conduct scholarly research (Albert, 2006). In the mid- and late-1990s, libraries began experimenting with a variety of new approaches designed to foster positive change, including alternative publishing models, the creation of new journals to compete with expensive commercial titles, new licensing arrangements, and consortial purchasing of electronic journals (English & Joseph, 2008). Many of these initiatives were spearheaded by the Scholarly Publishing and Academic Resources Coalition (SPARC) that was formed in 1997 (SPARC, 2019). While some of these efforts were proven successful, there was limited potential for creating transformative change in the system of scientific scholarly communication.

During the 1980s, few open access journals emerged as community efforts in which the plain text of articles was freely shared using mailing lists (De Silva & Vance, 2007). This sped up the momentum of open access movements in the early 1990s. In 2002, the Budapest Open Access Initiative introduced the concept of "open access" which was defined as the "free, immediate, online availability of peer-reviewed journal literature, with few restrictions on subsequent use" (Suber, 2009). These open access movements gained traction for strategies to provide open access journals and author self-archiving (e.g. open archiving) of scholarly articles. Its promising tenants include removing barriers to the wide distribution of research

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[1] PubMed Central is the National Library of Medicine's online archive of biomedical literature.

results and introducing a measure of cost control into the scholarly publishing marketplace (O'Keeffe, Willinsky & Maggio, 2011). The NIH policy arose from reasons of access as part of 1) the transition from print to digital, 2) the long-term growth of the role of the federal government in research and development, and 3) changing attitudes to government in America (Miller, 2009).

Advocacy on the part of the scholarly community and other concerned parties for open access to scientific literature continues to take place within a much broader, global context. Both private and public funding agencies are taking an interest in open access as a means of ensuring access to their funded research with the expectation that their investment in research will result in improvements to the public good (Suber, 2006B). The dissemination of research is an essential component of the research process and can be maximized through greater access to and use of research findings (Kiley & Terry, 2006). The challenge remains that results of such publicly funded research are not purported to be widely available to potential users. Instead, results are often published in costly domain-specific journals, expensive even for academic and medical libraries (Suber, 2006B). While the internet provides new opportunities to share and exchange information, the journal subscription model is still inaccessible and requires considerable effort for researchers and the public.

These considerations are not left unnoticed by funding agencies worldwide. As a response, developments around the world are implemented to create new policy frameworks designed to allow research results to be easily accessed and used (Matsubayashi et al., 2009). In 2003, The Wellcome Trust in Britain[2] endorsed open access (English & Joseph, 2008). A year later, the United Kingdom House of Commons opened an inquiry into scientific publishing which recommended that research funded by the United Kingdom Research Councils[3] be made publicly accessible (English & Joseph, 2008). Many public and private funding agencies worldwide have adopted similar policies that require or strongly encourage access to their funded research, including the Australian Research Council in 2006, and the Canadian Institutes of Health Research, the Howard Hughes Medical Institute, and the European Research Council in 2007 (English & Joseph, 2008). Drawing support from public agencies and governments, the NIH Public Access Policy is significant in that it is the first open access in the world mandated by the law of a country as one of the world's largest funder of scientific research (De Silva & Vance, 2007). Considerations of legislative policies and agencies as discursive resources in establishing open access provides a powerful tool to unpack the ideological significance of public access policies while drawing on narratives of struggle for power and problematization of the issue.

3 Methods

Language features prominently in discourse analysis as a powerful tool towards change. The analytic method used in this study is Norman Fairclough's Critical Discourse Analysis, henceforth CDA. Fairclough (1992, 2003) identified the coming together of texts, discourse practices, and social practices in the CDA as a mode of action, one that is socially constitutive. In his framework, *text* is defined as spoken and written language; *discourse*

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[2] The Wellcome Trust is Britain's largest private biomedical funder. It officially adopted open access policy in 2005.

[3] Between 2005 to 2007, six of the seven United Kingdom Research Councils adopted open access policies. However, the British government seemed reluctant to act on proposed recommendations to force authors to archive articles funded by the public. This was interpreted by some as the British government's unwillingness to upset the STM publishers, the largest of whom were headquartered in the U.K.

practices as the processes of text production, distribution, and consumption; and *social practices* as discourse in ideology and power. The CDA model stems from a critical theory of language that seeks the use of language as a form of social practice which is tied to specific historical contexts and is a means by which existing social relations are reproduced or contested and different interests are served. Fairclough sees "social life as interconnected networks of social practices of diverse sorts (economic, political, cultural, family, etc.)" which provides "an oscillation between the perspectives in social structure and the perspective of social action and agency" (2013). According to Fairclough, "CDA is analysis of the dialectical relationships between discourse, including language but also other forms of semiosis, e.g. body language or visual images, and other elements of social practices" (2013). His model provides a systematic means of uncovering the ideological dimensions of what often appear as highly polished and transparent accounts of the world.

The coherent framing of problems, such as open access, is intrinsically tied to constitutive effects of discourse on a) social identities, b) the social relations between identities, and c) wider systems of knowledge and belief (Fairclough, 1989). Adhering to the CDA model, this study investigates how the NIH Public Access policy has re-contextualized open access and scientific scholarly communication. The key text central to this analysis is the NIH Public Access Policy. The analysis draws on open access as a discourse resource and the interplay of agencies and associations that contribute to the development of the policy. The narrative presented in this analysis unfolds in a sequential manner and presents analysis from the text to the social practice and vice versa to reveal the dialectical relationship among and between the three dimensions.

4 Analysis

The Political Climate of the 1990s and early 2000s

The NIH funds cutting-edge research in biomedicine and the health sciences. This research is then published in peer-reviewed journals found in specialized commercial and scholarly society publishers. Three major overlapping markets for and communities interested in this research include 1) academic researchers, students, and libraries; 2) professional interests of doctors and healthcare professionals; and 3) corporate forces of researchers in the pharmaceutical and healthcare industries. The NIH is also interested in making this research accessible to healthcare consumers in an era in which individual Americans are encouraged, if not expected, to become informed consumers of healthcare services (English & Joseph, 2008). Each of these groups places a high premium on the currency, accuracy, and quality of the research and the reporting of the results of that research.

During the 1990s, the U.S. government envisioned a progressive future for the nation's telecommunication infrastructure that funnelled into health care and research. In 1996, President Bill Clinton famously declared that "the era of big government is over." (Miller, 2009). The rhetoric surrounding the time centred around the concept of "taxpayer money" and "public goods." Accordingly, congressional interest in the NIH Public Access Policy proposed by the library communities grew. Library communities across the country worked towards raising awareness of the issues and opportunities in expanding access to research results. Stakeholders outside of the library's traditional community partners shared a similar desire for expanded access to research results, particularly those funded by taxpayers' money. In August of 2004, the Scholarly Publishing and Academic Resources Coalition (SPARC) and the Open Access Working Group (OAWG) convened to create the Alliance for Taxpayer Access (ATA) to advocate for “taxpayer access”[4] which included members from patient advocacy groups, universities and colleges, publishers sympathetic to public access, public interest groups, and health advocacy organizations. They state:

> “Access to scientific and medical publications has lagged behind the wide reach of the Internet into U.S. homes and institutions. Subscription barriers limit U.S. taxpayer access to research that has been paid for the public funds. Taxpayer access removes these barriers by making the peer-reviewed results of taxpayer-funded research available online, and for no extra charge to the American public” (Miller, 2009).

Instead of arguing that a government program was needed to address the problem, ATA argued that “taxpayers”[5] had already paid for the research and should not be charged extra for access as emphasized in its four founding principles:

1. Taxpayers are entitled to open access on the internet to the peer-reviewed scientific articles on research funded by the U.S. government
2. Widespread access to the information contained in these articles is an essential, inseparable component of our nation’s investment in science
3. This information should be shared in cost-effective ways that take advantage of the internet, stimulate further discovery and innovation, and advance the translation of this knowledge in public benefits
4. Enhanced access to and expanded sharing of information will lead to usage by millions of scientists, professionals, and individuals, and will deliver an accelerated return on the taxpayers’ investment (Miller, 2009).

Working to advance its principles, ATA was active in advocacy, education, and communication programs, specifically in support of public access and other policies that supported the sharing of science. ATA’s use of the rhetoric of value for money for the taxpayer set forth the language making of the NIH policy and contrasts to the rhetoric of monopoly and subsidy that was embodied during the political climate of the 1960s (Miller, 2009).

Texts and themes in the NIH Public Access Policy

In the summer of 2004, the NIH Public Access Policy was drafted to propose a mandate that NIH grant funded research manuscripts be placed in to NIH’s open archive PMC. This proposal was in response to earlier discussions in the 1990s led by Dr. Harold Varmus, then director of NIH. In 1999, Dr. Varmus leveraged the political climate surrounding “taxpayer money” and “public goods” to propose the creation of “E-Biomed” to make all NIH-funded research outputs publicly accessible (Suber, 2005). The proposal called for an agency-wide policy that would require all manuscripts resulting from research funded by the agency to be deposited into an electronic repository, where it would be made freely available for anyone to access and use. Being a novel idea at the time, it generated significant interest and discussion which allowed the NIH to establish a robust digital repository.

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[4] Alliance for Taxpayer Access is a larger umbrella group dedicated to educating policymakers on the benefits of Open Access.

[5] Emphasis on taxpayer as it was used three times in the previous exert.

The efforts of NIH caught the attention of Congress Representative Ernest Istook who expressed a shared concern for the lack of access to research data and the corresponding sharp increases in journal subscription prices in the report accompanying the FY04 Labor, Health and Human Services Appropriations Bill (Kaiser, 2004). He encouraged the NIH:

> “to examine how the consolidation of for-profit biomedical research publishers, with their increased subscription charges, has restricted access to vital research information for not-for-profit libraries” (English & Joseph, 2008).

In the CDA model, Fairclough noted that “it is always worth attending to what is placed initially in clauses and sentences, because that can give insight into assumptions and strategies which may at no point be made explicit” (1992). The notion of “restricted access to vital research information” provides a set of conditions using language to instil tension by weighing against for-profit, commercial publishers and privileging “not-for-profit libraries.” The library community took the inclusion of this language as a key legislative instrument to begin coordinating a campaign to raise concern for public policy on the issue of limited access to publicly funded research.

Following the release of the draft NIH Public Access Policy, voluntary compliance among NIH grantees was only 10 percent (De Silva & Vance, 2017). Concern for compliance was also fuelled by two additional pieces of legislation that were introduced in Congress calling for expanded access to the results of publicly funded research. This included the “American Center for CURES Act” (The CURES Bill) in December of 2005, and the “Federal Research Public Access Act” (FRPAA) in May of 2007.[6] Endorsed by the library community, both policies used strong language requiring mandatory compliance for recipients of funding from public agencies to make their search publicly available six months after publication. This created an opportunity for a library-led coalition to expand its advocacy and education efforts. Central to these efforts include campaigns on university campuses that called for constituents to contact their members of Congress in support of these pieces of legislation and raise level of awareness and interest in the issues of public access.

Signed in December of 2007, the NIH Public Access Policy came into effect in April 2008. The law states

> “The Director of the National Institutes of Health ("NIH") shall require in the current fiscal year and thereafter that all investigators funded by the NIH submit or have submitted for them to the National Library of Medicine's PubMed Central an electronic version of their final, peer-reviewed manuscripts upon acceptance for publication, to be made publicly available no later than 12 months after the official date of publication: Provided, that the NIH shall implement the public access policy in a manner consistent with copyright law.” (Division F Section 217 of PL 111-8 (Omnibus Appropriations Act, 2009).

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[6] FRPAA was reintroduced in 2010 and again in 2012 to require manuscripts of articles generated from government agency funded research projects over US$100 million be made publicly available within six months after publication in peer-reviewed journals. According to the Act, these articles would need to be deposited in a repository of the respective funding agency or any other suitable repository to facilitate long-term archiving of the manuscripts. In 2015, FRPAA was succeeded by the Fair Access to Science and Technology Research Act (FASTR) that mandated an earlier public release of taxpayer-funded research by US government agencies, including NIH.

Changing the language being used in the policy around compliance, the structural text of the 2008 policy naturalizes the information presented. It represents the privileging of NIH funds and open access commitments consistent with copyright. The themes and structuring of given information in the versions of the policy inform the understanding of meaning and continuity established in text using key words, repetition, and strong language as an important way in influencing the readers' construction of text.

Discourse Practice: Differences in Discourse on the NIH Public Access Policy

In the interpretive analysis of the discourse practice in the changes introduced by the public access mandate, the policy is noted for its restrictive measures on publishers while privileging academic and scientific communities to the free use of scientific research. The processes of the policy production, distribution, and consumption reveals how various members come to see the NIH policy. Fairclough suggested that identifying the context of the situation provides two bodies of information relevant to determine how context affects the interpretation of text (1992). First, a reading of the situation which foregrounds certain elements, backgrounds, and others relate elements to each other in certain ways. Second, a specification of which discursive types are likely to be relevant. Understanding how the texts are produced, distributed, and consumed informs understandings of how authors work to ensure particular interpretations of texts and how it engages with other materials.

The development of the NIH Public Access Policy exemplifies the commitment of library communities for public access. Prior to the first draft, SPARC led the American library community to organize a new, collaborative mechanism to respond to opportunities presented by emerging political and technological changes (English & Joseph, 2008). In 2003, the OAWG was created with a mission to build broad-based recognition that the economic and societal benefits of scientific and scholarly research investments could be maximized through open access to the results of research (Matsubayashi et al., 2009). The OAWG's initiative reflected the growing recognition that the library community should undertake collaborative action where its collective voice could achieve greater persuasive force than the individual voice of any single member. Original membership in the OAWG include the seven major U.S. library organizations with additional membership from Open Society Institute, Public Library of Science, and Science Commons over time (English & Joseph, 2008).

The initial strategy developed by OAWG centred on building recognition of the benefits of open access among various stakeholder groups, including the general public, advocacy groups, scholars, scientists, physicians, lawyers, research funders, and federal policy makers (Suber, 2009). By using this strategy, the OAWG was able to leverage its member organizations' resources to seek crucial professional guidance in helping to develop a comprehensive strategy to build momentum surrounding open access and public access. The group consulted a professional firm for specific advice on creating a strategy to approach key policymakers, and consulted another professional firm to help build and sharpen its communication efforts.

Understanding the profound potential benefits galvanized behind the creation of FRPAA, high profile university provosts saw the value of public investment in scientific research for higher education institutions. In an open letter to the higher education community in 2006, one group of provosts stated:

> "The broad dissemination of the results of scholarly inquiry and discourse is essential for higher education to fulfill its long-standing commitment to the advancement and conveyance of knowledge" (English & Joseph, 2008).

University and collective presidents similarly voiced their support. Support from these critical strata of the academy provided important new momentum for the library community.

The library-led advocacy campaign also involved a strong external media effort, taking care to inform a range of media contacts in the popular and trade presses (Davis, 2009). *Dateline NBC* was one venue that highlighted public access and the benefits for patient care (English & Joseph, 2008). Academic and library communities were also kept up to date on its progress and opportunities surrounding the policy. Coalition members engaged in an active schedule of public presentations. Despite these efforts, the final policy unveiled in February in 2005 and was considerably weaker than the House report language. The library community, supporting coalitions, and members of Congress were concerned about these weakened policy changes. It fell short on two major areas:

1. It "requested and strongly encouraged" rather than requiring taxpayer-funded authors to post their articles
2. It extended the embargo period from six months to 12 months (Miller, 2009)

Despite strong campaigns, the Appropriations Bill was not passed in 2006 during the mid-term elections due to changes of control in Congress.

Over the course of 2006, new NIH Director Dr. Elias A. Zerhouni testified that NIH investigators were not complying with the voluntary policy (Suber, 2009). Subsequently, the House and Senate, once again, through strong language demanded accountability from NIH in their respective versions of the FY06 Labor, Health and Human Services appropriations legislation (English & Joseph, 2008). They requested that formal reports from NIH evaluating participation levels and the average embargo period chosen by funding recipients be delivered to Congress. It was not until 2007 when the bill was reintroduced into Congress.

As the policy moved through Congress, mainstream and trade media showed increasing interest and coverage on the policy (Davis, 2009). On May 31, 2006, *The Wall Street Journal* published a poll indicating that an overwhelming majority of 82 percent Americans supported public access (English & Joseph, 2008). Extensive coverage, in-depth debates and discussions added new momentum to the library community's advocacy efforts. As a result, the House Appropriations Committee moved the NIH public access language from the report accompanying the Labor, Health and Human Services Appropriations Bill to the actual text of the bill itself, marking a significant move that signalled increased interest in the policy (English & Joseph, 2008). As a result, the Full House of Representatives passed the Appropriations Bill with language indicating the NIH should strengthen the policy by making it mandatory for researchers to participate.

To support and strengthen the bill language mandating public access, library-led initiatives including OAWG and ATA, waged a strong campaign on education and advocacy in Congress. Control over the open access discourse by a small number of groups established central definition of roles to redefine knowledge with respect to the scientific scholarly communication. Regulations being placed on the formation of a discourse serves to regulate those who have access and control alternative possibilities. Conversations about the public good, taxpayers, and restricted access to scientific research suggest the simplification of scientific scholarly process that leave out many complexities. To ensure the direct relationship between policy and practice, one must engage in discourse practices that eliminate as much resistance as possible. As an example, by 2014, the NIH policy took the form of mandatory and heavily enforced compliance by denying continuing grant payments for noncompliance.

Social Practice: The Technological Climate and the Changing Publishing Front

On the technological front in the 1990s, publishers were becoming reconciled to the photocopier as part of the scholarly communication system, storage on microfilm as being superseded by digital storage and online networks becoming preferred delivery systems for information. The threat that publishers saw in ERIC, a government-financed education information distributor, was being replaced by National Library of Medicine's (NLM) descendent of Medical Literature Analysis and Retrieval System (MEDLARS) which provides access to NLM's biomedical literature and PMC's repository (Miller, 2009). In an environment in which literature can be digitally duplicated without loss of quality, the prospect of a single repository and point of access for medical articles appeared to publishers to be a new existential threat to the established system of scholarly communication (Harnad, 2005). From a historical context, existing scholarly communication is often challenged by new technology which then changes the system and becomes incorporated into the system of scholarly communication. Fairclough suggests the analysis of social practices makes explicit connections between discourse practices and these social practices where "social practices can be thought as ways of controlling the selection of certain structural possibilities and the exclusion of others" (2003).

The growing popularity of the internet in the 1990s also transformed the way people interacted with digital materials, such as music, software, and digital content. Corporations and publishers sought to retain control of their copyrighted context. In the era prior, copyright policy was relatively arcane area of the law of interest to content industries like publishing, film, radio, television, education, and the nascent information industry (Miller, 2009). Few individuals, other than authors, were interested in the subject. The advent of photocopying meant that unmediated copying was in effect and accessible to professional staff in institutional copy centres in offices, libraries, and schools. The influence of users in copyright policy development was always expressed through institutional lobbies like library and educational associations (Suber, 2009). By contrast, the comparable disruptive web-based copying technologies of the 1990s and 2000s allowed individuals to participate in copying which led to the growth of a politically active, grassroots, user-oriented, information policy lobby that formed alliances with library associations and with like-minded corporations. One outcome of this process is the open access movement and open source software movement (Chan, 2004). In the U.S., the NIH policy became one of the most visible expressions of the open access movement.

In 2004, the library community's advocacy work centred around efforts to support NIH in adoption of a strong public access policy. In July of that year, the House Appropriations Committee passed the FY05 Labor, Health, and Human Services Appropriations Bill which included report language explicitly calling for NIH to implement a public access policy (English & Joseph, 2008). It required researchers to submit an electronic copy of their final, peer-reviewed manuscript to PMC that is to be released six months after the article's publication. The Congressional language prompted NIH to move forward with a process of drafting a policy to ensure greater access to publicly funded research. In September 2004, the NIH announced a draft policy requesting all recipients of NIH-funded research to voluntarily place these materials in an open-access repository. However, the draft was weaker than the House bill language using the term "voluntary."

Following the draft, NIH began an extensive public consultation process, which included large stakeholders meetings attended by publishers, librarians, researchers and members of the general public. The consultation process also includes publication of the proposed policy in the Federal Register and further solicitation of public comments with more than 6,000 comments received, compiled, and made public by the NIH (Joseph & English, 2010). The clear majority of the comments were highly favourable to the proposed policy. Comments were also submitted by the library community, individuals, institutions, membership organizations, and large coalitions like the ATA. At the same time, OAWG and ATA members undertook an active communications campaign calling on NIH Director Zerhouni, at the time, both in writing and in face-to-face meetings to adopt the public access policy (Suber, 2008). Among these efforts, the library community sought to educate members of Congress on the importance of enacting a strong public access policy. The community leveraged many channels, such as Congressional visits, letter-writing campaigns and support for Congressional champions of the policy. The Appropriations Bills moved through Congress and was eventually signed into law in December 2004, with compromised report language endorsing the draft NIH proposal with the omission of the required six-month embargo.

The Publisher's Side

Throughout the development of the policy, the efforts of the library community were met with vocal groups actively and aggressively opposed to the idea. Since the announcement of the NIH policy, a subset of the publishing community, led mainly by commercial players, staged their own efforts to influence the debate over public access. These publishers waged an extensive, vocal, and expensive campaign to discredit the notion of public access and derail the progress of the proposed policies thus far (English & Joseph, 2008). In 2007, media outlets including *Nature* and *Washington Post* made public a memo from the Dezenhall Association who was hired by the Association of American Publishers. The leaked memo called "Pit Bull of PR" outlined aggressive campaign tactics against public access and proposed to confuse the issue and keep public access advocates on the defensive (Weiss, 2007; Giles, 2007). Furthermore, Dezenhall suggested slogans, such as "imagine a world without peer-review" and "public access equals government censorship", designed to combat the issue and delay consideration

Receiving extensive coverage in the press, the strategy was met with a large negative outcry from the academy, library community, and segments of the publishing industry and later diffused by its exposure to the public. Pushing ahead, the Association of American Publishers unveiled another campaign: this time a website called "PRISM" (the Partnership for Research Integrity in Science and Medicine) (English & Joseph, 2008). The site included text that noted its explicit charge to educate policymakers on dangers of public access policies, closely mirroring the arguments suggested in the leaked "Pit Bull" memo. By the time PRISM was released, the academy, library community, and most policymakers were aware of the issues raised by some publishers. Other issues raised by opponents of the policy include concerns centred on how the policy may or may not impact copyright and intellectual property rights. However, this was largely a misunderstanding. The NIH policy leaves copyright with the author of the work. The agency did not remove copyright protection of materials produced because of its funding.

The negative public reception of both industry campaigns was helpful to the library community in reducing the time and resources invested to respond. Throughout the year-long process and aggressive counter-efforts of public access opponents, language calling for the NIH policy to be made mandatory was finally included in the text of the Appropriations Bill. After debate by appropriation subcommittee and full committee hearings in both the House and Senate, the revised policy was passed. As part of the Consolidated Appropriations Act of 2008, the new mandatory NIH Public Access Policy was signed into law on December 26, 2007 calling for mandatory public access to NIH-funded research twelve months after publication (De Groote et al., 2015).

As a result of ongoing opposition from publishers, Congress introduced the Fair Copyright in Research Works Act (H.R. 6845) in 2009 to amend the NIH mandate. The supporting argument was those expressed previously by commercial and society publishers suggesting the clear conflict with copyright while threatening the journal publishing sector. However, the NIH and 47 copyright experts disputed the NIH policy's copyright violations. In 2011, the Research Work Act was introduced to revert the NIH policy and block similar open access developments for federally funded research. In an interesting turn of events, the largest European commercial publisher, Elsevier withdrew its support for the bill and the bill's authors announced they would no longer pursue it.

During a public hearing on "Fair Copyright in Research Works Act", Mr. Ralph Oman, an intellectual property law fellow at The George Washington University Law School used the analogy of Bayh-Dole to refer to the copyright conflict. He states:

> "Bayh-Dole was adopted in recognition of the fact that inventions developed with taxpayer money weren't being commercially exploited because they couldn't be turned over to the private sector.
>
> The government had no real vested interest in commercializing these wonderful inventions and the money that was invested wasn't serving the public.
>
> Bayh-Dole allowed those inventions to be commercially exploited, relying on the extraordinary energy and innovation of the private sector to do what had to be done to get them into public commerce.
>
> The same is true on the copyright side. The private sector has that commercial drive. They have the ability to innovate.
>
> They can work cooperatively with the government and with the NIH in developing a system that is going to serve all parties.
>
> But to do that, they need that basic copyright protection that allows them to make the investments up front without getting any immediate reward, any immediate compensation for their investment, but over the life of the copyright, would allow them to recoup that investment as normally is done under the copyright laws." (Fair Copyright in Research Works Act, 2008)

Commercial and society publishers emphasize that their only incentive to make investments in peer-review and quality articles is by acquiring the copyright in the article from the author who is often a NIH grant recipient. Mr. Howard Coble, a Representative in Congress from the State of North Carolina summarizes the competing arguments from the publishers and NIH's perspectives on copyright:

> “From the publisher's perspective, the NIH policy effectively reduces their [publishers] exclusive right in a copyrighted work to 12 months. Further, in the absence of the value added by privately subsidized peer review and publication, publishers assert that less relevant medical information will be disseminated to the public in a timely manner.
>
> They argue that NIH is not in the business of evaluating individual studies and publishing the meritorious ones.
>
> Finally, the publishers maintain the NIH policy violates our international IP treaty obligations. Beyond this point, they believe our failure to repeal this policy will only encourage lax regard for IP globally, a conflicting message, since this Subcommittee has led the fight against overseas piracy and anti-counterfeiting.
>
> In contrast, NIH and its defenders wishing to disseminate medical knowledge more quickly and widely believe that recipients of Federal funding should be required to share their work products with the sponsoring public.
>
> They argue that the mandatory NIH policy only requires the grant recipients to provide the agency with a nonexclusive license. The authors may still transfer some or all of the exclusive rights under copyright law to a journal publisher.
>
> This is not a force transfer, as grantees don't have to accept Federal funds to conduct the research.
>
> Supporters of the NIH policy also maintain that the new mandate is consistent with our IP treaty obligation under TRIPS and the Berne Convention.” (Fair Copyright in Research Works Act, 2008).

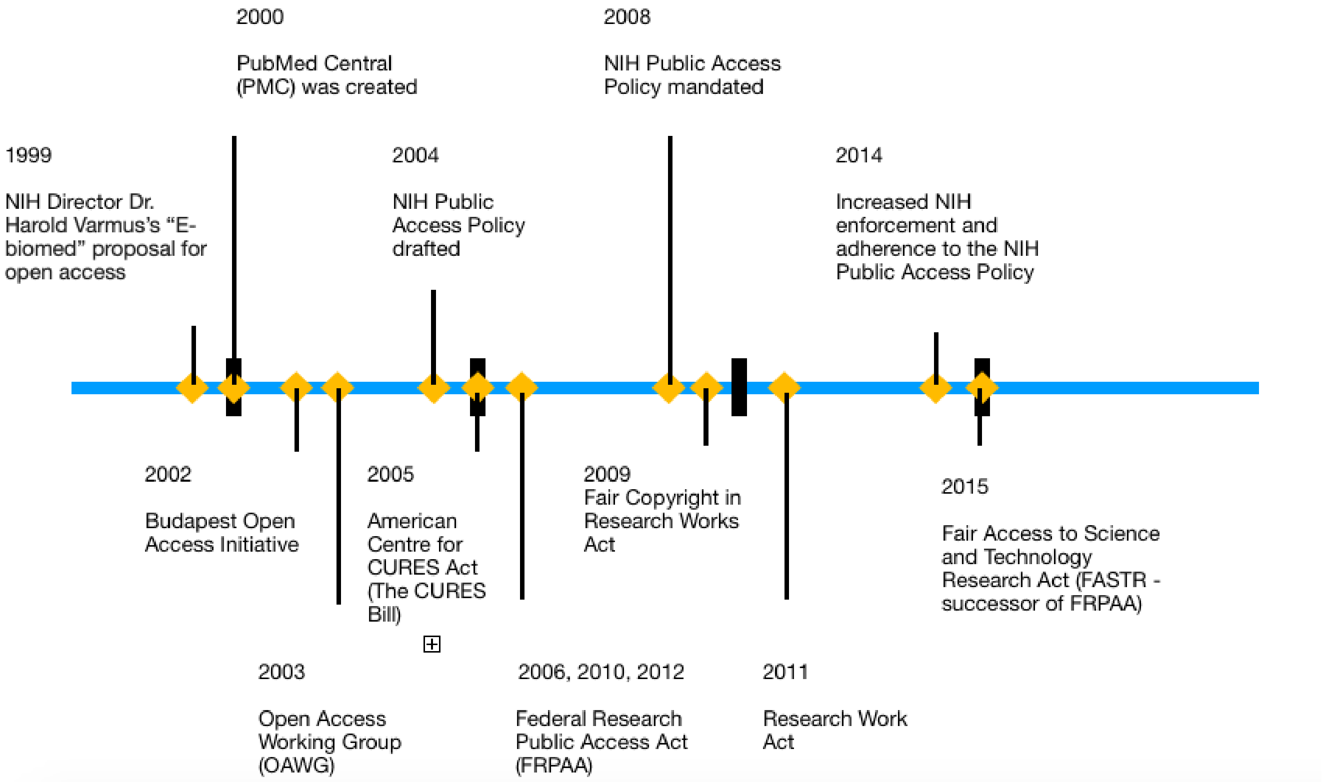
On the one hand, publishers do provide significant and valuable services to the process of scholarly communication. On the other hand, taxpayers paid for research and should expect to receive some form of return. It is also a fair question to ask whether copyright is promoting the progress of science if it results in a system where researchers and scholarly have limited access to protected works.

What is presented through these discourse practices is the naturalization and consolidation of the message that both NIH and publishers convey in their messages in media and congressional hearings. Statements and testimonies of experts and members of Congress distill information and inform policy. Representatives from publishers, libraries, and the NIH present authoritative truths on open access, copyright, and taxpayers’ money. These dialogues and reports actively construct a perceived consensus in terms of the problem at hand the potential solution. Understanding the specific ways by which policymakers and experts are placed in positions of authority and how they relay certain understandings about the topics as hand is essential. This suggests the political arena as a site of power struggle but also a stake in power struggle.

5 Conclusion

The development of the NIH Public Access Policy marks the creation and deployment of the advocacy efforts through collaboration with strata of the academy and library community. New collaboration structures, such as SPARC and ATA, and creative leveraging of resources among a spectrum of contributing organizations mark its success. Fairclough’s CDA model maps the discourse surrounding the NIH policy and uses of sophisticated political rhetoric by the library community and publishers. This policy marks certain groundings in political and technological environments of the 1990s and early 2000s that contribute to the social practice in which the NIH policy existed and emerged from. The struggle of power between different communities contribute to the sensemaking and production of the policy itself. It underscores the critical nature of the library community's expanding partnerships with different members of the academy, Congress, publishers, and general public. Despite opposition from profit and non-profit publishers, the bill is significant for being the first open in the world mandated by the law of a country. With an operating budget of U.S. $29 billion in 2008 and $37 billion in 2018, NIH is the world's largest public funder of biomedical research with funds distributed through grant agreements to outside researchers. The library community's current advocacy challenge is to keep attention focused on the opportunities presented by the policy and leverage collaborations with NIH-funded researchers, research administrators, and legal counsels. With Plan S launched by Science Europe in September of 2008, it serves to establish a similar open access mandate to research funded by state-funded organizations and institutions. It will be interesting to observe how this open access initiative unfolds in Europe.

Figure 1. Timeline of the NIH Public Access Policy.



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