


<b>Section A</b>		
<b>Institution:</b> University of St Andrews		
<b>Unit of Assessment:</b> UoA28: History		
<b>Title of case study:</b> Informing practice and policy on the future of academic journal publishing		
<b>Period when the underpinning research was undertaken:</b> 2013 - 31 December 2020		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b> Aileen Fyfe	<b>Role(s) (e.g. job title):</b> Professor	<b>Period(s) employed by submitting HEI:</b> 01 January 2011 - present
<b>Period when the claimed impact occurred:</b> December 2014 - 31 December 2020		
<b>Is this case study continued from a case study submitted in 2014?</b> No		
<b>Section B</b>		
<b>1. Summary of the impact</b>		
<p>Publishing in academic journals facilitates the circulation of knowledge, enables the scrutiny of new claims to knowledge, and enhances the professional standing of researchers working in universities. It also supports a highly profitable industry whose business model is currently being challenged by funder and government open access policies. Our research team led by Professor Aileen Fyfe investigated the history of the world's longest-running scientific journal. It generated new insights into the business model of mission-led publishing societies, and into the functions and social dynamics of peer review. These insights have <b>influenced operations in the Royal Society</b> (a learned society publisher of eleven journals, with a turnover of GBP6,000,000), by providing an evidence base that helped to generate internal support for 2 major capital projects worth GBP2,200,000; and for the 2020 decision to transform the sustainability model of the Society's research journals. More broadly, our evidence base has <b>stimulated and informed wider debates</b> about open access publishing, peer review and the role of learned society publishers. Our historical insights have been used by publishers in Europe and the USA, EU funding agencies, and UK/EU policy makers to <b>help motivate changes in practice</b> among their stakeholders, thanks to Fyfe's sustained engagement with these organisations since 2015.</p>		
<b>2. Underpinning research</b>		
<p>The research was undertaken between 2013 and 2017 by a team led by Aileen Fyfe, in partnership with the Royal Society, the UK's national academy for the natural sciences. The partnership initially focused upon the needs of the Royal Society's library &amp; archive staff in relation to the upcoming 350<sup>th</sup> anniversary of the <i>Philosophical Transactions</i> in 2015. The status of the <i>Transactions</i> as the world's oldest and longest-running scientific journal meant that its 'origin story' was already well-known, so the research focused on its subsequent development, with particularly close attention to the editorial and publishing practices that lie behind the printed page and can only be revealed by studying the surviving manuscript archives. The over-arching insight of the research is that academic journals (as we now know them) were not invented in 1665; rather, the ways journals communicate scholarly knowledge have been repeatedly re-shaped by political, social and economic circumstances [R1].</p> <p>Fyfe subsequently developed a good relationship with senior staff in the Society's publishing division, who not only facilitated access to privileged data regarding the most recent changes in editorial and publishing practices but generated new questions for the research. As a result, Fyfe and her co-authors published a series of articles investigating the history of the business model underpinning the circulation of knowledge; the practices of editorial peer review; and the diversity implications of peer review in a closed community of evaluators.</p>		

The findings about **business models** are grounded in research into the publishing finances of the Royal Society in the 19th and 20th centuries. Publishing scientific journals has not always been commercially profitable, and the Royal Society's history revealed precedents for alternative ways of funding the circulation of knowledge [R2]. Long before digital open access, there was a well-established tradition of scholarly commitment to the wide circulation of scientific knowledge, free to the end-user, supported by learned society publishers [R3]. This changed only in the second half of the twentieth century.

Our insights into the **editorial practices** of academic journals are based in an investigation of the criteria and purposes of the evaluation process, and the diversity (or not) of the people involved. Refereeing emerged within the social practices of gentlemanly learned societies in the late 18th and 19th centuries, and the research showed that its function has historically been quite different from the function and meaning now ascribed to 'peer review' [R4]. Quantitative evidence demonstrated the apparent limits of a peer review system with a closed pool of evaluators in a time of dramatic growth [R5]. Current concerns about diversity at the Royal Society led to new research into women's participation in editorial practices, which demonstrated that it was cultural practices rather than explicit rules that excluded women scientists from the evaluation of scientific research at the Royal Society for most of the 20th century [R6].

### 3. References to the research (indicative maximum of six references)

R1 is a short briefing paper that derives from, and represents, the wider body of original research. R2-R6 are fully peer-reviewed scholarly outputs.

R1: A. Fyfe, et al. (2017), *Untangling Academic Publishing: A history of the relationship between commercial interests, academic prestige and the circulation of research* <https://zenodo.org/record/546100> [OA]

R2: A. Fyfe (2015), 'Journals, learned societies and money: *Philosophical Transactions*, ca. 1750–1900.' *Notes & Records* 69(3): 277-299. DOI: [10.1098/rsnr.2015.0032](https://doi.org/10.1098/rsnr.2015.0032) [OA]

R3: A. Fyfe (2020), 'The Royal Society and the noncommercial circulation of knowledge', in M. Eve and J. Gray (eds), *Reassembling Scholarly Communications: histories, infrastructures, and global politics of open access* (MIT Press, 2020) DOI: [10.7551/mitpress/11885.003.0016](https://doi.org/10.7551/mitpress/11885.003.0016) [OA]

R4: N. Moxham and A. Fyfe (2018), 'The Royal Society and the pre-history of peer review, 1665-1965' *Historical Journal* 61(4): 863-889. DOI: [10.1017/S0018246X17000334](https://doi.org/10.1017/S0018246X17000334)

R5: A. Fyfe, F. Squazzoni D. Torny, and P. Dondio (2020), 'Managing the Growth of Peer Review at the Royal Society Journals, 1865-1965' *Science, Technology and Human Values*. DOI: [10.1177/0162243919862868](https://doi.org/10.1177/0162243919862868) [OA]

R6: C.M. Røstvik and A. Fyfe (2018), 'Ladies, Gentlemen, and Scientific Publication at the Royal Society, 1945–1990' *Open Library of Humanities* 4(1). DOI: [10.16995/olh.265](https://doi.org/10.16995/olh.265) [OA]

### 4. Details of the impact

Our research insights on the history of academic journal publishing have had three major impacts:

#### 1. Using history to change the Royal Society

The longevity of the *Transactions*, and the Royal Society's role in creating and sustaining this journal, are a matter of institutional identity and pride for the Society. Our findings provided the historical basis for the conceptualisation and planning of **the Society's year-long celebration of 350 years** of the *Transactions* in 2015 [S1]. This included an exhibition, curated by us, that ran at the Society between December 2014 and June 2015, during which time it was visited by approximately 25,000 people [S2]. The text we wrote for the exhibition and its accompanying brochure enabled a significant expansion and reinterpretation of the historical sections of the Society's publishing website. This subsequently gained greater influence when it was incorporated in January 2015 into a vastly-expanded Wikipedia page that now covers the entire 350-year history of the *Transactions*; which receives around 2,300 page-views every month with a total of 142,200 unique views since its inclusion [S3].

The publishing division of the Royal Society draws upon institutional history for the **branding and marketing** of its journals. Our research [R4] enabled the Society's Publishing Director to

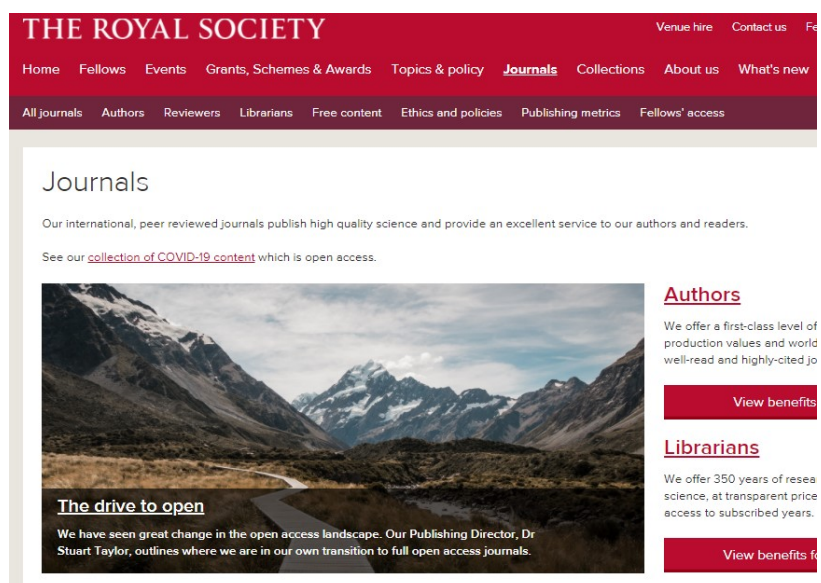
“correct many of our public statements and marketing messages” that draw upon the Society’s history [S1]: for instance, the Society no longer claims to have invented peer review in 1665 and refers instead to ‘the 1830s’. Additionally, the Society began to publish diversity statistics in 2016, but it was not until our research [R5-R6] that it began to investigate **diversity among its peer reviewers** (as well as authors): those statistics are now included in the Society’s annual Diversity Report.

According to the Society’s Head of Library and Information Services, our research led to a **new “internal recognition of the importance of the Society’s printing history”**. For the Society, our reinterpretation of its archival material helped to make the case for resources for digitisation, for employing temporary project staff for cataloguing and project management, and for appointing a Digital Resources Manager. It also drove a “wider repositioning of the department, towards actively partnering with academics” [S2].

The new recognition of the Society’s publishing history enabled the Publishing and Library divisions to gain support internally for **2 major capital projects**: a GBP1,700,000 re-digitisation of the Society’s entire published journal collection (Royal Society Journal Collection, completed in winter 2017); and a GBP500,000 project to digitise and make openly accessible archival material, including historical peer review reports (‘Science in the Making’, completed June 2020). The Publishing Director acknowledged Fyfe’s direct input as a result of her research [R4-R6] “in shaping and guiding” these projects [S1].

## 2. Advocacy for learned society publishers to transition to open access

Our research findings [R1-R3] were used as an effective tool of persuasion by the Royal Society’s Publishing Director in his longstanding and increasingly urgent quest to persuade senior leadership of the Society to consider the ‘high level purpose’ of its journals, and the proper **balance between money and mission**. Our discovery of the Society’s long history of non-commercial circulation of knowledge was especially important here, and the Director writes that he has “found it useful in a number of discussions with our senior leadership team and Officers as I try to make the case for open access at the Royal Society.” He adds that the research “has been instrumental in helping me get the Society’s Council to review our publishing strategy. ... and to consider a better balance between ‘publishing as mission’ and ‘publishing as income.’” A review of publishing strategy was launched in 2019, and in July 2020, **Council agreed to transition the research journals “to fully open access over the next five years”** [S1].



THE ROYAL SOCIETY

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### Journals

Our international, peer reviewed journals publish high quality science and provide an excellent service to our authors and readers.

See our [collection of COVID-19 content](#) which is open access.

#### The drive to open

We have seen great change in the open access landscape. Our Publishing Director, Dr Stuart Taylor, outlines where we are in our own transition to full open access journals.

#### Authors

We offer a first-class level of production values and world well-read and highly-cited journals.

[View benefits](#)

#### Librarians

We offer 350 years of research science, at transparent price access to subscribed years.

[View benefits](#)

The argument that learned societies provided key organisational structures for early forms of not-for-profit knowledge circulation [R2-R3] has relevance for many learned societies. The question ‘**How Should Scholarly Societies Transition to OA?**’ was the focus of a professional development webinar run by the Open Access Scholarly Publishers Association in 2019; it was the organisation’s “most popular webinar to date”, with 219 people (participants, including publishers, librarians, funders and non-profits) from 36 countries, including Indonesia, Zimbabwe and Japan [S4]. Fyfe’s contribution provided the stimulus for thinking about alternative models for learned society publishing. In a 2019 comment piece in *Research Fortnight*, Fyfe further argued that membership-based organisations (such as learned society publishers) have a responsibility to lead change in scholarly publishing. This argument has changed the perspective of those outside learned society publishing, as well as those within: the Director of Open Science

at Hindawi (a commercial company that has become a leader in providing open access solutions for the developing world) admitted that Fyfe’s work has “*radically shifted my perspective from one that saw learned societies as a barrier to change, to one in which they could provide crucial leadership in the more open scholarship necessary for the 21<sup>st</sup> Century*” [S5].

Since 2015, many **organisations seeking to bring about change** in academic publishing have used our insights in this way: to encourage their stakeholders to think differently about current publishing models. As the Executive Director of the Open Access Scholarly Publishers Association notes, Fyfe’s historical research “*enables us to give much-needed encouragement*” to our members [i.e. publishers], because it provides “*the evidence to support the ability of the scholarly communications system to change*”. [S4]

### 3. Stimulating debates in the UK, USA and Europe around the future of academic publishing

Fyfe’s **sustained engagement** with media, academic publishers, open access organisations, and UK/EU funders and policy makers has ensured that our research on business models and on peer review has become essential context in the public and semi-public debate surrounding the future of academic publishing, in a way that was not true before 2015. The variety of these organisations can be seen in the diagram on the right.



A major **pathway to impact was the 2017 *Untangling* briefing paper** [R1], which summarised the research

findings and explicitly related them to contemporary concerns. It has become **the ‘go-to’ reference on the history of academic publishing**. More than three years since publication, it is still being regularly downloaded and cited [S6]; and recommended on twitter, particularly by those working in scholarly communications, library science and research administration (see below). It has been read, discussed and cited in the UK, Europe and the Americas. It had been downloaded 4,990 times by December 2020, including 1,400 times in 2020 alone.

The extensive coverage in news and policy sources as well as tweets, Facebook, and blogs is reflected in an Altmetric score of 461 for *Untangling Academic Publishing* (most History outputs have Altmetric scores of 70 or less). It has been used in researcher-education workshops by

universities from Manchester to Bergen. Google Scholar lists 114 citations in a wide variety of academic fields and in the grey literature [i.e. policy and debate]; and shows that the citation rate is still growing. It has been cited, for example, in expert reports to the European Commission (2017 and 2019), and in reports by the Swiss National Science Foundation (2019), Universities UK (2018), the Global Young Academy (2018), and the Wellcome Trust (2020) [S6].

Fyfe's participation in the Royal Society's four-day 'Future of Scholarly Scientific Communication' meeting in 2015 generated a snowballing series of contacts with scholarly publishers, publishing organisations, and funding bodies. In addition, Fyfe has contributed to media targeting research and higher education stakeholders, for instance, *Times Higher Education*, *Research Fortnight* and the *LSE Impact Blog*. Fyfe's expertise is regularly sought by publications as varied as *Intellectual Property World*, *Chemistry World*, *Le Monde* and *Vox news*; and the radio documentary *The Great Science Publishing Scandal* (BBC Radio 4, 2019).

**US-based publishing organisations** have used our work on peer review [R4] to help their members (i.e. publishers) reflect on the importance of scholarly editorial practices: for instance, the American Association of University Presses sought Fyfe's historical perspective to help launch its new guide to 'Best practice in peer review' (Philadelphia 2016); and the directors of MIT Press and Amherst College Press asked Fyfe to provide the provocation to open their stakeholder workshop on peer review (Boston 2018), which resulted in their report *Transparency in Standards and Practices of Peer Review: report of a stakeholder's workshop and recommendations for action* (2018).

**Open access publishers** have been particularly keen to draw upon our discovery of the long history of non-commercial academic publishing [R3] because it enables them to present their activities as part of a long scholarly tradition, and to make the case for the importance of their services. The Director of Open Science at Hindawi explained that she uses our insights "as a key part of my arguments and narrative in trying to... educate different actors and audiences about scholarly publishing". She also uses them as persuasive tools for "leveraging change within different policy environments, including the European Commission as part of the EU Open Science Policy Platform and on UKRI Open Access Practitioner's group". [S5]

**Funders and policy makers in the UK and Europe** have recognised the value of our historical research for stimulating and informing debates about future change. For instance, the European Commission's High Level Expert Group on Open Science (Lisbon 2017) and the Westminster Higher Education Forum (London 2019) both asked Fyfe to contribute to meetings discussing open access publishing; while Science Europe (a coalition of major research funders) asked her to provide the opening stimulus for a closed workshop on the future of academic publishing (Brussels 2019). Knowledge Exchange (a coalition of European funders and infrastructure providers) asked her to join the expert team to address the challenges of organisations working together towards open scholarship; the Coordinator of Knowledge Exchange described the 3,400 downloads of the resulting book-length report *Open Scholarship and the Need for Collective Action* (2019) as "amazing", and reported that it had already given "direction to the debate" [S7].

#### **5. Sources to corroborate the impact** (indicative maximum of ten references)

S1: Letter from Director, Royal Society Publishing

S2: Letter from Head of Library and Information Services, Royal Society

S3: The *Philosophical Transactions* on Wikipedia: statistics on sources, edits and views, 2015-2020

S4: Letter from Executive Director, Open Access Scholarly Publishers' Association, August 2019

S5: Letter from Director of Open Science, Hindawi, August 2019

S6: Altmetric report, downloads and Google Scholar citations for *Untangling Academic Publishing* at December 2020

S7: Emails from Coordinator of Knowledge Exchange, January-April 2020