Learned societies and open access: key results from surveys of bioscience societies and researchers

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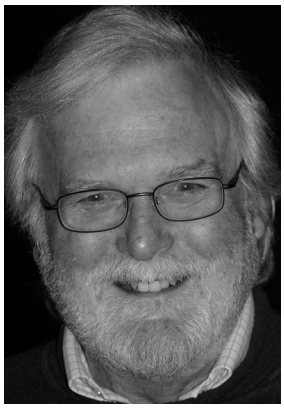

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Biosciences Federation surveys in 2008 found that member societies contributed twice as much financially to UK HEIs as they received from them. None of the societies currently offers full open access (OA), but all provide delayed free access, commonly after 12 months. Some offer optional OA for a fee, but report very low take-up so far.

Considerable confusion exists amongst scientists about what OA journals are. Almost half the OA journals they said they read, and a third of those they said they published in, were not OA journals at all. Around 15% of survey respondents had tried to access OA funds from their institutions or funders, and more than half of these had found this difficult. While three-quarters of the respondents said they supported open access, only one third thought self archiving was a good idea. Again, respondents were confused about what was or was not a repository of self-archived material.

Introduction

The Biosciences Federation (BSF) is the body representing the UK's leading biosciences learned societies. Its 35 member learned societies vary in size from 20 to 6,000 members and have a total membership of almost 40,000 (after allowing for multiple memberships) and are mostly charities. Of these, 27 publish, producing a total of 75 journals (mean 2.78) as part of their charitable educational remit, with a substantial proportion of the content being available online free of charge. Following on from its position statement on open access (OA) and self archiving in September 2007[1], the BSF decided to undertake surveys of its member societies and of the individual researchers who belong to them. The objective was to analyse the experience of its member organizations with regard to their publishing activities, especially concerning open access and self archiving by authors, and to gather information on the financial contribution made by the societies to their disciplines. Twenty-three societies took part in this exercise. In addition, the societies were asked to encourage their members to complete an online questionnaire on their experience and views of

open access publishing and self archiving. There were 1,368 usable responses to this questionnaire. These respondents belonged to a mean of 1.45 BSF member societies and to 1.83 societies in all.

Of the 27 BSF members that publish journals, 23 responded to the questionnaire on financial issues; 17 of these (covering 39 journals) provided data usable for this report, although not all provided answers to all questions. Seventeen societies responded to the second questionnaire, 13 of which were the same as the respondents to the first survey. The responses represented the range of self publishing (3 societies), third-party publishing (12) and a mix of the two (2).

Methodology

The three surveys were piloted initially by members of the BSF's Journals Committee. After final amendment, they were conducted as online surveys, using the Survey Monkey (www.surveymonkey.com) software. The first questionnaire covered the financial questions and was addressed to the CEOs and Finance Officers of the relevant BSF member societies (i.e. those that are learned societies). The second was addressed to publishing staff (including staff of the third-party publisher, if any, responsible for the society's journals). The third was intended for the individual members of each organization, and a suggested e-mail message was supplied for forwarding to members.

Thirty-five member organizations were identified as being learned societies, and a message from the Chief Executive Officer of the BSF, Dr Richard Dyer, was sent to the CEO and/or main contact at each, inviting participation. Figures were requested for the most recent full financial year; it was recognized that much of the information was highly sensitive, and respondents were therefore assured that their information would be treated completely confidentially, and presented only in anonymized and aggregated form. The invitation was followed up when necessary by reminders, at which point ambiguous responses were also clarified individually.

Key points from the financial survey

For the first time reliable data is now available about library subscription income from, and financial benefits returned to, UK HEIs for a substantial sample of learned societies, and has clearly established the benefits to UK HEIs.

The mean total journal income was about £1.3M per society, or an average of £556K per journal. These figures include subscriptions and also licensing income and other income such as advertising, reprints, etc., where stated. Some respondents did not give details of the non-subscription income, so the actual totals may be somewhat higher than the figures stated here. A mean of 10% of institutional subscription income and 29% of licensing income came from UK institutions; a mean of £134K of journal income per society. If this is representative of all 27 BSF members that publish, this would imply a total of £3.6M of journal subscription income – about 4% of UK universities' total journals expenditure[2].

On the other hand, the societies in the sample contributed substantially more to the UK research community through their other activities. Twenty societies each organized between one and 34 events (conferences, training events, seminars, etc.) per year (mean 8), at a mean net cost of £137K per society, or £17K per event (three societies did not provide an answer to this question). Of those attending and benefiting from these events, 79% were from the UK, so each society subsidized UK researchers to the tune of £108K. It is worth noting additionally that these events are usually held in UK universities, bringing significant revenue to these institutions for hire of conference facilities and accommodation. Nineteen respondents also indicated that they provide research grants, bursaries and other similar funding; four did not answer this question. The respondents handed out a total of £2.3M at a level ranging from £1.5K to £800K (mean £122K per society); 78% of this (£1.8M in total; mean £95K) went to UK recipients. In total, almost £3.9M flows from these societies to the UK biosciences research community – about 2.16 times as much as the amount the society respondents receive from that community in journal subscriptions and licences (see Table 1). Scaling these benefits to cover a wider group of learned societies is, of course, subject to assumptions about their level of publishing activities and charitable expenditure; however, these figures might indicate a total contribution of nearly £2.5M net direct benefit to UK biosciences departments from BSF members alone, a mean of just under £23K per university (averaged across both 'old' and 'new' universities). In reality, the benefit

is likely to be higher for research-intensive universities such as the members of the Russell Group, while some universities do not carry out biology research at all. By any calculation, this is a very satisfactory 'return on investment'.

This figure is even more impressive when one considers that there are a very large number of UK societies in total – over 1,000, according to the Foundation for Science and Technology. Even if bioscience societies were better funded than the average society, the implication is still that UK universities and UK researchers would be significantly financially disadvantaged if this funding source ceased to exist.

Many BSF societies also carry out other activities that benefit the UK. Responses indicated that, during the year in question, they provided educational activities, at a mean net cost of £105K per society (much of which was devoted to school-level education of future science students and researchers); 93% of this, or an average of £98K per society, benefited the UK community specifically. Many also engage in other charitable activities (including public understanding of science, and government liaison and representation), at a mean cost of £141K, with 85% (£120K) of the benefit going to the UK. Thus, the total direct and indirect contribution to UK research was £6.2M, which would imply a very substantial sum indeed if scaled up for all 1,000 learned societies.

It is worth noting the difference between the mean percentage of revenue received from UK universities (10%) and the mean percentage of corresponding authors who come from the UK (15%). Thus, if society publishers were to move to a 100% open access publishing model, with charges that maintained their current level of activities, the cost to the UK research community would be likely to increase by about 50%, with a corresponding decrease in the cost to the research communities in other countries.

Key points from the survey of learned societies' publishing policies and experience

The 17 respondents to the second survey owned 62 journals in total (mean 3.65). Three published all their own journals; 12 used a third-party publisher; and two used both methods for different journals.

Despite a common perception that publishers restrict access, in fact all of the respondents already offer at least one form of free access publication and 71% offer more than one: 76% offer delayed free access (almost two-thirds after 12 months) without author-side charges; 71% make selected articles available, without charge, at their own discretion (for example, review articles) at the time of publication; and 65% offer the option of immediate open access at the time of publication in exchange for an author-side payment (mean fee £1,782). However, so far, this option has only been taken up for 1.35% of papers published.

A large majority (88%) of society publishers who responded currently allow all authors to self

	Total to/from UK	**No. relevant respondents***
Society journals subscription income from UK HEIs	–1,590	14
Society journals licensing income from UK HEIs	–200	10
Total flow *from* UK HEIs	**–1,790**	
Events support	2,052	19
Grants, bursaries etc	1,812	19
Total direct support to UK HEIs	**3,864**	
Total direct support as % of journal income	*216%*	
Education activities	978	10
Other charitable activities	1,321	11
Total indirect support of benefit to UK HEIs	**2,299**	
Total of all direct and indirect support to UK HEIs	**6,163**	

* Relevant respondents are those who replied and took part in the activity in question (ie excluding those who did not respond to each question or who gave a zero response)

Table 1. Cost/benefit flow to the UK HEI and research community (£K); results from a survey of learned societies in the Biosciences Federation

archive in some way. They differ as to which version may be deposited: using the NISO/ALPSP terminology where possible[3], 33% allow deposit of the author's manuscript (i.e. submitted manuscript before peer review); 80% the accepted manuscript; 7% the manuscript as passed for typesetting, after editing; and 20% the PDF as published (the version of record); 35% allow more than one version to be deposited. They also differ as to where deposit may take place: all allow deposit in an institutional repository; 87% on authors' own web pages; 87% in a subject-based repository such as PubMedCentral; and 80% on departmental web pages. Most permitted more than one of these. The timing of deposit also varied: 7% allowed immediate deposit; 7% on publication; 20% six months after publication; and 53% 12 months after publication. For the remainder, the period was stated as 24 or 36 months. In this context, it is worth noting that BSF members publish a wide range of subject matter, from biosciences to ecology and systematics and thus they operate in widely differing environments, which may affect how soon they can make content available free without endangering subscriptions.

Most of the respondents (81%) had a policy in place to accommodate funders' OA requirements (see Figure 1): 46% permitted immediate self archiving, but almost all of these (83%) required payment of a fee (the mean fee was £2,100, the same as the OA publication fee charged by those publishers); 77% permitted delayed self archiving (most commonly after 12 months), for which 10% required a fee; 38% would carry out the deposit themselves immediately on the author's behalf, all of them in return for a fee; 31% would do so after a delay and none of these charged a fee. Over half (54%) would make the article OA in the journal, for which 91% of these would charge a fee. The majority offered more than one option. In 29% of cases, mandated authors could deposit the author's original manuscript; 57% the accepted manuscript; 7% the version passed for typesetting; and 43% the PDF as published (the version of record). Again, many permitted deposit of more than one version.

Half of the societies felt that many authors are unaware of their funders' policies and of how to access funds; 29% thought they were aware of such policies, while 11% did not know. Almost one third were aware that authors had had difficulty with accessing funds. Thus, there is work to be done to make sure that funders' policies are well understood, and that the availability of funding and the means of obtaining it are transparent.

Key points from the survey of the publishing experience and opinions of individual society members

Responses were received from a total of 1,368 scientists who are members of one or more BSF societies. The majority (90%) were between 26 and 65 years old and most (73%) were based in the UK. They had submitted a mean of 1.72 articles in

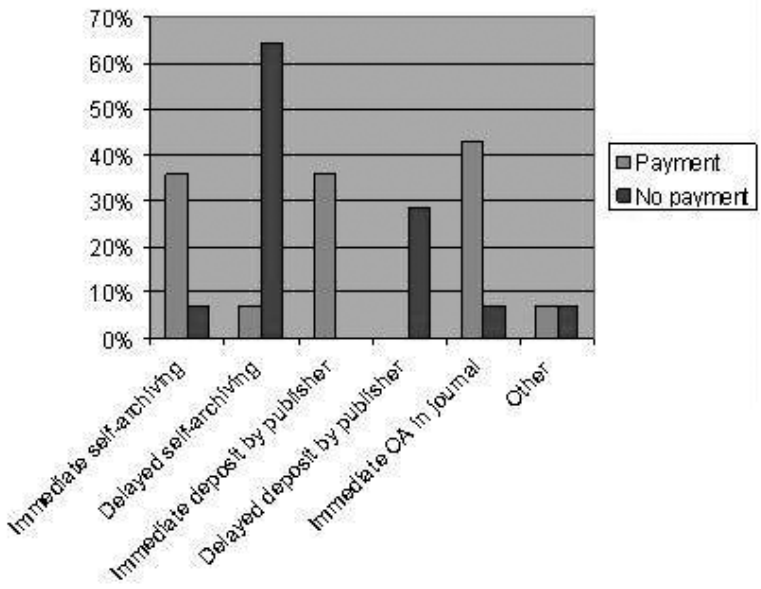

Figure 1. Self-archiving policies for funder-mandated deposit

the last 12 months as main author and 2.13 as co-author; they had actually published 1.43 as main author and 1.79 as co-author.

Open access

There was a distinct lack of understanding of OA, in both its OA journal publication ('gold route') and self archiving ('green route') forms. Only 6% had never heard of OA, or were not sure what it meant. However, even for those who thought they did know, 45% of the OA journals that they said they had read were not, in fact, full OA journals at all; similarly, 33% of the OA journals in which they said they had published were not OA. Many of the comments throughout the survey showed considerable confusion between OA journals and online (or online-only) journals. This is probably because online journals are usually free at the point of use through institutional subscriptions.

So far, researchers appear to be less supportive of OA in practice than they are in principle. Almost three-quarters (74%) of respondents thought OA journals were a good idea, and 78% of those giving arguments for or against were totally in favour, while 10% gave arguments both for and against, and just 11% gave arguments entirely against. However, only 60% said that they actually read OA journals (and 27% of the resources they mentioned were not, in fact, full OA journals, so the true figure is more like 44%), while 16% said they did not and 24% did not know. Just 25% said that they published in OA journals (again, 34% of titles were not OA journals, which reduced the real figure to around 17%), while 55% did not and 20% were not sure. There was little sign of an age bias in respondents' publishing and reading behaviour; however, younger researchers were more likely not to know whether the journals were OA, and older researchers were less likely to support the idea of OA journals in principle, and more likely to be unsure.

The reasons why people published in OA journals were often matched by the opposite perception in those who did not. High prestige was cited as a reason by 103 (27%) of those who thought they published in OA journals; low prestige by 247 (38%) of those who did not. Rapid publication was cited by 143 (38%) of those who thought they did, and slow publication by 11 (2%) of those who did not. Wide readership was cited by 200 (53%) of those who thought they did, and low readership by 83 (13%) of those who did not. Support for the principle of OA was cited by 225 (60%) of those who thought they did publish in OA journals, and opposition to it by 30 (5%) of those who did not. Two additional reasons, closely related to each other, were given by those who did not publish in OA journals: cost (122 - 19%), and lack of access to funds (79 - 12%).

The existence and level of author-side charges was the concern most frequently expressed against OA journals, although in reality there appeared to be very little difference between non-OA and OA journals as regards the frequency and level of charges (in the former case, colour and page charges); in both cases, about two thirds said they had paid less than £500/$1000 on the last two occasions. The sums they mentioned paying were noticeably less than the OA fees quoted by the societies responding to the survey. By far the most common source of the funds to pay these fees was the research grant (60%). Over half (53%) of those who used funding from either their funder or their institution found it 'fairly difficult' or 'very difficult' to access the funds. It is to be hoped that the work undertaken during 2008 by the Research Information Network and Universities UK to identify the issues more clearly and to produce recommendations for research funders, universities, researchers and publishers will enable these groups to address the problems.

Respondents listed a number of arguments for or against OA journals. Arguments in favour were given by 78%, and by far the most frequently mentioned benefit was wider access; however, benefits to the author (deriving from wider readership/citation), and personal convenience, were also frequently mentioned. Among the 10% who gave arguments both for and against, access was almost always the plus factor, whereas cost/ability to pay was the most frequently mentioned downside, followed by quality concerns. The 11% who gave arguments against were most likely to mention cost/ability to pay, followed by quality concerns, and destabilization of learned societies and specialist journals.

When asked their view of the long-term effects of OA journals, 31% outlined only benefits, of which wider/fairer access and increased readership were by far the most frequently mentioned and 21% outlined only the downside, headed by negative effects on established societies and journals; cost/ability to pay came a close second.

About 29% foresaw significant changes in the future publishing and scholarly communication

system: a growth in the number of OA journals, with consequent pressure on non-OA journals (and societies) to change their business models, or indeed driving them out of business (the latter welcomed by a few!).

Self archiving

There was also a lack of clear understanding of self archiving and repositories. In the case of self archiving, 52% were either unaware of the practice of self archiving, or were not sure; here, too, respondents found it difficult to distinguish between OA repositories, licensed content, and resources that were not OA repositories at all. The 48% who said they were aware should probably be scaled down to 42%, since 13% of references were to resources other than repositories of self-archived material.

Support for self archiving was much less wholehearted than for OA journals. Just 36% thought it was a good idea, while 14% thought it was not and 50% were unsure. Seventy-two percent never accessed self-archived versions of articles when they had access to the published version (Figure 2), and 53% even when they did not (Figure 3); there was a marked preference (75%) for accessing the fully functional published version on the journal site, followed by the 'flat' PDF (50%), and the author's final version after both peer review and copy-editing (43%). The version most frequently mandated for deposit by funders – the author's manuscript after peer review, but before copy-editing – was favoured by only 19%. Access to self-archived versions became slightly less likely with increasing age of respondents. Among those who used self-archived versions of others' work, 47% used search engines to do so; 39% used a link provided by the author, and only 6% searched directly in repositories.

Only 29% of respondents said that they ever self archived their own work; however, since 10% of references were not to repositories of self-archived work, this should probably be reduced to 26%. There was little age difference except that those over 75 were markedly more likely to self archive (nearly 50%). About half (51%) said they did so for their own convenience, 37% because they supported self archiving in principle, 29% at their institution's or department's insistence, and 23% at their funder's insistence (more than one reason

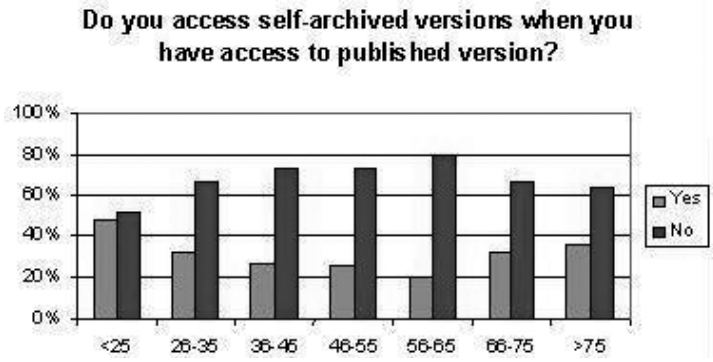

Figure 2. Percentage of respondents accessing author's self-archived version when they have access to the published version, by age group

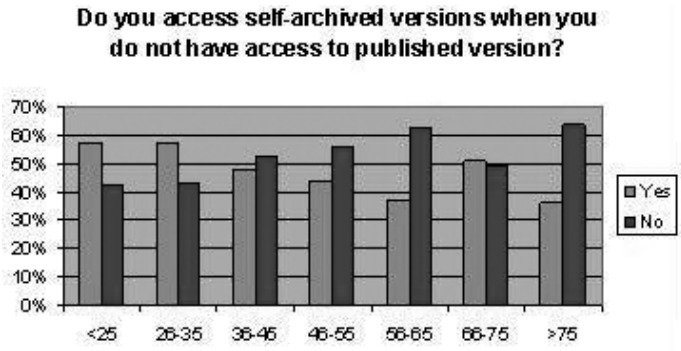

Figure 3. Percentage of respondents accessing author's self-archived version when they do not have access to the published version, by age group

could be selected). Among the 71% who never self archived their work, the most frequently selected reason was lack of peer review (31%); 26% were concerned about multiple versions; and 19% cited lack of copy-editing. Twenty-one percent did not want to damage the journals in which they published (this was the only point in the survey where possible damage was suggested by the questions).

Thirty-five percent of those who did self-archive said that they placed their articles in their institution's repository, 14% in a subject-based repository, 19% on departmental web pages and 31% on personal web pages (more than one answer could be selected). However, when asked to name the institutional or subject-based repository, again some uncertainty emerged and other types of resource were included. Only 33% self archived all their work; of those who only archived some, 38% selected their new work, 24% their best work, and 7% their older work (a variety of other reasons for selection were also given).

Thirty-six percent of respondents stated that they thought self archiving was a good idea; 14% thought it was not, and 50% were unsure. There was little age variation in those in favour, although younger respondents were more likely to be unsure, and older ones to be against the idea (Figure 4).

Of those who gave arguments for and against self archiving, 47% outlined its benefits: wider and easier access for the reader was most frequently mentioned, with author convenience/control and wider readership/citation for the author coming a long way behind. Eleven percent gave arguments both for and against. Again, access was the main argument in favour; on the negative side, quality concerns/lack of peer review were most frequently mentioned, followed by the cost in time, effort and money to authors and institutions. Among the 34% who gave arguments against self archiving, quality/lack of peer review was once again the most frequently mentioned, followed by the confusion caused by multiple versions, and the cost to authors in time, effort and money. When asked about the long-term consequences of self archiving, 24% outlined entirely positive effects: primarily wider access, followed by better science enabled by that access. A mixture of positive and negative effects were mentioned by 8% of respondents: mainly improved access, but offset by lack of peer review/quality control, damage to publishers and journals, and the prospect of chaos if there were no formal organization, institutional support and/or guidelines. The largest group, 35%, saw the long-term effects as entirely negative: lack of quality control once again headed the list, followed by the confusion caused by multiple versions, and damage to journals, publishers and societies.

Conclusions

The analysis has highlighted a number of important points.

Learned societies make an important financial contribution to UK universities

Only 10% of the societies' journal subscription and licensing income comes from UK institutions (a total of £1.8M for those societies analysed) but almost 80% of the benefit from their grants and events support goes to UK scientists, students and their institutions (an annual total of almost £3.9M for those societies providing figures). Thus, they contributed more than twice as much to UK HEIs as they received from them. Any moves that threaten the financial viability of learned societies would therefore have a significant deleterious effect on the funding of the UK science base.

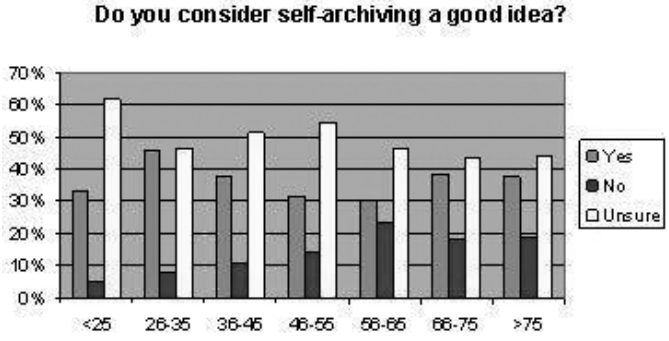

Figure 4. Percentage of respondents considering self archiving a good idea, by age group

All the respondent societies provide free access to most of their material

Of the 17 societies analysed who publish journals, all provide some form of free access to most of their online journal material. This is usually in the form of delayed free access, most commonly after 12 months. Some also offer optional immediate open access on payment of a fee, but they report very low take-up so far.

There is substantial confusion amongst researchers about what open access means

Amongst the 1,368 researchers who responded to the online survey, there was considerable confusion about what open access journals actually are. Almost half of the open access journals they said they read, and a third of those they said they published in, were not open access journals at all. There seemed to be confusion between online journals (whether providing material free or not) and journals where all material is available free immediately on publication. Thus it is unclear how many of the 74% who said they supported open access really understood the issue. Nonetheless, there seems to be substantial support among researchers for the principle of open access.

Researchers are experiencing difficulty in accessing funds

Only around 15% of survey respondents said they had tried to access OA publication funds from their institutions or research funders to pay for author-side charges. Of these, 53% had found this fairly difficult or very difficult. This adds weight to the BSF's earlier call[4] for universities to set up ring-fenced funds, and to provide researchers with simple information on how to access them.

Researchers are confused about self archiving

Although, as mentioned above, almost three quarters of researchers responding to the questionnaire said they considered OA journals a good idea (with the caveat about lack of clarity on the definition), only about one third thought self archiving (deposit of one of a variety of versions of the paper into university or subject repositories) was a good idea and there was considerable concern about self archiving. Again, many respondents were confused about what was or was not a repository of self-archived material.

Researchers are uneasy about self archiving

Three quarters of respondents are happy to read the final published journal article, but less than 20% said they were happy with the author's final version (i.e. before it is copy-edited and laid out by the publisher, but after peer review). This is the version commonly available in repositories. Many cited fears about multiple versions and unedited versions as their reasons for this.

Only 3.5% said they accessed the self-archived version where possible if they also had access to the published version, and 67% never, or rarely, accessed the self-archived version, even if they did not have access to the final published version. Only 12.5% of respondents self archive whenever possible and 71% never do so.

The researchers' responses show that, even where some form of OA publication is required by funders or institutions, researchers still prefer to use the final version, as it appears in peer-reviewed journals, to earlier versions in institutional or subject repositories.

Implications for open access and self archiving

Researchers are sympathetic, at least in principle, to funded open access publishing, although this is not fully borne out by their practice to date, and there is substantial confusion about what open access actually is. Researchers are more worried, however, about self-archiving repositories.

Provided it is adequately funded, open access publishing could be a viable alternative to the current subscription model in some disciplines. However, in some areas it is unlikely to work unless new funding streams are introduced. This includes subjects such as clinical medicine and systematics, where most research is not supported by grant funding. It also includes review papers, which are often the most highly cited (and by implication most widely read), but which are also not supported by grant funding, and papers from parts of the world where funding would not be available to authors.

If there is a continued expansion of moves by funding bodies and universities to mandate self archiving with access becoming free within a period that is less than the journals' current time frames for making material free to all, then a point will come at which so much of the material will be free to readers that the current model of library subscriptions is logically likely to collapse. If peer-reviewed journals are not to cease to exist, this implies a move to author-side payments for journal publication, which will simultaneously achieve funders' objectives of making articles immediately

freely accessible. This could be achieved if funding bodies were to make the money for this available to researchers via their host institutions, and if institutions were to have robust and clear systems to allow researchers to access these funds. Not only will this assist the effectiveness of researchers by reducing time spent dealing with confusing and complex systems, but it will also help prevent the potential collapse of the journals currently published by learned societies, which provide the peer-reviewed definitive version of research outputs. In addition it will protect the substantial financial contribution that learned societies make to UK universities, especially in terms of support to postgraduate students and early-career scientists. The UK science base, and in particular bioscience departments in universities, would be disadvantaged if this funding stream were to cease.

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