House of Commons

Science and Technology Committee

Scientific Publications: Free for all?

Tenth Report of Session 2003-04

Volume I: Report

HC 399-I

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Volume I: Report

Report together with proceedings of the Committee

Ordered by the House of Commons
to be printed Wednesday 7 July 2004

HC 399-I
Published on 20 July 2004
by authority of the House of Commons
London: The Stationery Office Limited
£0.00

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Summary

Academic libraries are struggling to purchase subscriptions to all the journal titles needed by their users. This is due both to the high and increasing journal prices imposed by commercial publishers and the inadequacy of library budgets to meet the demands placed upon them by a system supporting an ever increasing volume of research. Whilst there are a number of measures that can be taken by publishers, libraries and academics to improve the provision of scientific publications, a Government strategy is urgently needed.

This Report recommends that all UK higher education institutions establish institutional repositories on which their published output can be stored and from which it can be read, free of charge, online. It also recommends that Research Councils and other Government funders mandate their funded researchers to deposit a copy of all of their articles in this way. The Government will need to appoint a central body to oversee the implementation of the repositories; to help with networking; and to ensure compliance with the technical standards needed to provide maximum functionality. Set–up and running costs are relatively low, making institutional repositories a cost–effective way of improving access to scientific publications.

Institutional repositories will help to improve access to journals but a more radical solution may be required in the long term. Early indications suggest that the author–pays publishing model could be viable. We remain unconvinced by many of the arguments mounted against it. Nonetheless, this Report concludes that further experimentation is necessary, particularly to establish the impact that a change of publishing models would have on learned societies and in respect of the "free rider" problem. In order to encourage such experimentation the Report recommends that the Research Councils each establish a fund to which their funded researchers can apply should they wish to pay to publish. The UK Government has failed to respond to issues surrounding scientific publications in a coherent manner and we are not convinced that it would be ready to deal with any changes to the publishing process. The Report recommends that Government formulate a strategy for future action as a matter of urgency.

The preservation of digital material is an expensive process that poses a significant technical challenge. This Report recommends that the British Library receives sufficient funding to enable it to carry out this work. It also recommends that work on new regulations for the legal deposit of non–print publications begins immediately. Failure to take these steps would result in a substantial breach in the intellectual record of the UK.

The market for scientific publications is international. The UK cannot act alone. For this reason we recommended that the UK Government act as a proponent for change on the international stage and lead by example. This will ultimately benefit researchers across the globe.

1 Introduction

1. This Committee is appointed by the House of Commons to examine the expenditure, administration and policy of the Office of Science and Technology (OST) and its associated bodies. As well as its role in advising the Chief Scientific Advisor and the Director General of the Research Councils on the allocation of the Science Budget, OST has a role in overseeing science and technology policy across Government. The Committee has a similarly broad remit.

2. The scientific, technical and medical publishing industry has recently come under intense scrutiny. Whilst the volume of research output and the price of scientific journals has been steadily increasing – one respected source cites average journal price increases of 58% between 1998 and 2003 – library budgets have seen funding decreases.[1] As a consequence, the ability of libraries to purchase journals has come under severe pressure. This phenomenon is often dubbed the "serials crisis". The Government has an interest in ensuring that public money invested in scientific research is translated into outputs that benefit the public. The Government invests significantly in scientific research, the output of which is, for the most part, published in research articles. Subscription prices to journals vary – we have been quoted figures from £87 to £2,843 per annum for a range of individual journals of differing quality.[2] Many libraries subscribe to thousands of journals each year. Yet whilst libraries are struggling to purchase journals, scientific, technical and medical publishers' profit margins remain exceptionally high compared with the rest of the publishing industry — as much as 34% at the operating level in the case of Reed Elsevier, the market leader.[3] There is mounting concern that the financial benefits from the Government's substantial investment in research are being diverted to an excessive degree into the pockets of publishers' shareholders.

3. Technology has made it possible to envisage a fundamental change to the way scientific articles are published. By removing some of the non–editorial overheads associated with print publications, digitisation makes it relatively cheap to set up and run new journals. The internet makes it feasible, in theory, for readers to access the articles they need online, without charge. Several publishing models based around the central concept of free online access have emerged: collectively their proponents form the "Open Access" movement. The future of the scientific publishing industry has yet to be determined in the light of these new developments.

4. We announced our inquiry into scientific publications on 10 December 2003. Our aim was to examine the provision of scientific journals to the academic community and wider public. We wanted to establish whether the market for scientific publications was working well; how trends in journal pricing affected libraries and other users; the impact that new publishing trends would have on the scientific process; and what provisions were in place to support a secure national archive. We also looked at the risk to the integrity of journals posed by scientific fraud and malpractice, particularly in the light of recent publishing

1 The Chartered Institute of Library and Information Professionals, Ev 411

2 Nature Publishing Group, *Price List 2004*, www.npg.nature.com

3 Q 80

trends. Our inquiry tapped into an already lively public debate. In 2002, the Office of Fair Trading conducted an informal consultation on the market for scientific, technical and medical journals. Its report concluded that no further action should be taken at present but that further action might be required in future.[4] In January 2003 the Wellcome Trust, the UK's biggest single funder outside Government of medical research, published an analysis of the scientific publishing market and publicly adopted a pro–Open Access stance.[5] Many other organisations have also been prompted into a consideration of the issues, some taking up the Open Access cause, some defending the interests of the existing commercial publishers and others remaining neutral. The arguments on all sides have been aired extensively in the media and online. The Committee has received an unprecedented volume of letters expressing support for its decision to conduct the inquiry. Many individuals and organisations volunteered to give oral evidence to the inquiry: unfortunately it was not possible to see everyone in the time available.

5. In the course of our inquiry we held four oral evidence sessions with Government; the Research Councils; commercial, not–for–profit and author–pays publishers; libraries and academics. The transcripts of these sessions are published with this Report, along with the 150 written submissions we received in response to our call for evidence and as answers to supplementary questions. We visited the British Library at St Pancras and Reed Elsevier's Holborn offices in London and took part in a seminar on scientific publishing hosted by the Wellcome Trust. We would like to place on record our thanks to all those who contributed to this inquiry, by giving evidence or by assisting us on our visits. We would also like to thank our specialist advisers: David Worlock, the Chairman of Electronic Publishing Services Limited; and Professor Michael Elves, formerly the Director of the Office of Scientific and Educational Affairs at Glaxo Wellcome plc.

4 Office of Fair Trading, *The market for scientific, technical and medical journals* (OFT 396), September 2002, p 21

5 The Wellcome Trust, *Economic analysis of scientific research publishing*, January 2003. A second report was published in 2004: The Wellcome Trust, *Costs and Models in scientific research publishing*, April 2004.

2 Background

Terminology

6. Recent developments in scientific publishing have given rise to a vast quantity of new terminologies. For clarity, an outline of the terminology used in this Report is given below:

- **Scientific publications:** for the purposes of this Report, scientific publications can be taken to mean articles reporting scientific, technical and medical (STM) research in published journals. Where monographs and other types of literature are considered they will be referred to separately. The market for journals in the social sciences, arts and humanities has different characteristics and is not considered here.

- **Article:** for consistency, the constituent parts of a journal are referred to as articles throughout this report. An article is taken to be the document produced by researchers as a record of their research findings. Many journals also contain review articles and "news and views". For the purposes of this Report, this type of material is not implied by the term "article" unless explicitly stated. Articles are frequently also referred to as **papers** within the scientific community.

- **Subscriber–pays:** the most prevalent publishing model. Authors submit articles to journals, usually free of charge, although sometimes the author is required to pay **page charges** or supplements for colour figures.6 The publishers send the articles out for peer review. Those articles that are deemed to be of a sufficiently high standard are edited and published. The journal is then sold to readers, usually by means of a subscription. **Commercial, learned and professional society** and **academic publishers** all currently use this model, although some of them are also experimenting with the **author–pays** model.

- **Author–pays:** an emerging publishing model. Authors or, more usually, their research funders pay to publish their article in a journal. The publishers send the articles out for peer review. Those articles that are deemed to be of a sufficiently high standard are edited and published. The journal is disseminated free of charge, primarily via the internet, although sometimes in paper form too. In some cases the author, or funder, pays a submission fee in advance of the publication fee in order to cover the administrative costs of processing their article, whether or not it is accepted for publication. Author–pays publishing is often referred to as **open access publishing.**

- **Open Access movement:** supports the principle that the published output of scientific research should be available, without charge, to everyone. The movement embraces both author–pays publishing models and self–archiving. The term "Open Access" will only be used in the broad context of the wider movement, not as a synonym for the **author–pays** publishing model or **self–archiving**, for the purposes of this Report.

6 A colour figure can be taken to mean, in this context, a colour illustration, photograph, chart, graph, table etc.

- **Self–archiving**: authors publish articles in journals, but deposit a copy of each article in a personal, **institutional** or other **repository**, where it can be freely accessed via the internet.

- **Institutional repositories**: online archives set up and managed by research institutions to house articles published by authors at the institutions involved. Such repositories can accept articles either before or after publication (pre–print repositories and post–print repositories): the timing of the deposit in relation to publication has copyright implications.

- **Commercial publishers**: publishers that provide goods and services for a financial return. Globally, Reed Elsevier, John Wiley and Springer Verlag are three of the largest publishers in this category.

- **Learned and professional society publishers**: attempt to produce a return for the societies of which they are part. Profit is usually re–invested in other society activities, such as education support and conferences. With university presses, learned and professional society publishers are sometimes collectively referred to as **not–for–profit publishers**.

- **University presses** "try to make a return for their host institutions but see themselves as producing high quality work in return for profit, rather than concentrating on the production of profit by means of publishing".[7] For the purposes of this Report and in accordance with convention, unless specifically singled out, university presses are classed with society publishers.[8]

- **Page charges**: charges levied on the author within the **subscriber–pays** publishing model. Charges are usually calculated according to the number of pages in the article, although publishers sometimes charge a supplement for colour figures. Not all publishers impose page charges.

- **Bundling**: the practice of selling a subscription to a group of (usually digital) journals in a package, or "bundle". The package is negotiated between the publisher and the purchaser. Typically the price of the bundle will be lower than the combined price of all the journals, and will be capped for the duration of the subscription. Publishers often include their entire collection in the bundle. Bundling deals are sometimes referred to as **the big deal**.

- **Legal deposit**: publishers and distributors in the United Kingdom and Ireland have a legal obligation to deposit published print material in the six legal deposit libraries that collectively maintain the national published archive of the British Isles. The legislation is soon to be extended to cover digital publications.

The focus of this Report is primarily on the provision of STM journals to the academic community as this accounts for the spending of significant amounts of public money through libraries and the higher education system. It should be noted, however, that many users of such journals also work within industry, Government and other organisations.

7 The Wellcome Trust, Economic analysis of scientific research publishing, p 17

8 See, for example, OFT, p 5

Scientific, technical and medical publishing: an overview

Why publish?

7. In the scientific, technical and medical fields, publication is an integral part of the research process. Researchers publish their findings in order to ensure widespread dissemination of their work, primarily within a community of their peers, where it will be discussed, assessed and built upon. Publication has the potential to enhance the reputation of the author, support applications for research funding and aid promotion prospects: the Publishers Association explained that "publication and effective dissemination to the peer community are absolutely vital to researchers in terms of tenure and the capacity to attract research grants and university funding".[9] In the UK, university departments are assessed by their research output in the Research Assessment Exercise (RAE) for the purposes of allocating universities' block grants. As one of the main indicators of the level and quality of research output, the publication of journal articles is of great importance to researchers and their institutions. The impact of the RAE on the market for scientific publications will be discussed in paragraphs 208—210 of this Report. The above factors all provide authors with a strong incentive to ensure that the publishing process is functioning well.

8. Whilst most researchers would agree with the group of academics who stated that "inaccessible research may as well not have been conducted at all", there is some dispute about whether wide or targeted dissemination of research findings is most important.[10] The Securing a Hybrid Environment for Research Preservation and Access (SHERPA) Project told us that "researchers give their articles to journals in order to achieve 'impact' not income. They want to be influential in their field so that their work will be cited by colleagues. It is therefore in authors' interests that their work should be disseminated as widely as possible".[11] The Royal Society of Chemistry, however, argued that "most authors care where their work is seen and who it is seen by far more than they care about how many people have seen it. Quality wins hands down over quantity where authors are concerned about readership".[12] This dispute goes to the core of the question of who should pay for scientific publications: those who argue in favour of the widest possible dissemination tend to be more receptive to the author–pays model of publishing; those who prefer targeting publications at a small, selected audience tend to be more content to maintain the status quo.

9. There are, of course, reasons for the publication of research findings other than the career and reputational motivations of authors. Science is an ever–evolving discipline. Without access to the latest research findings, researchers would find themselves lagging behind or repeating work that had already been carried out elsewhere. Axiope Limited, a small software company that advocates the sharing of primary research data as well as research findings, explained how researchers build upon research being carried out by their peers: "those who collect the initial data see it being used in ways they had never dreamed of. The other users are able to do research that would have been impossible without

9 Ev 96

10 Ev 440

11 Ev 215

12 Ev 209

publication of the data".[13] Many witnesses also outlined the benefits of publishing research findings, particularly from medical research, for the general public. Dr Virginia Barbour told us that: "the free flow of scientific information is essential; not only to other researchers and physicians, but also to an increasingly medically sophisticated public".[14] Publishing thus serves two "public good" purposes: it makes the research process more efficient and it helps to inform the public of developments in the scientific, technical and medical fields.

The publishing process

10. Figure 1, opposite, outlines the main stages in the publishing process under a subscriber–pays model.

Peculiarities of the market

11. The market for scientific publications is unusual in several respects:

- Authors provide their articles to publishers for free. In a conventional market suppliers (authors) are paid for the goods that they provide.
- The point of purchase is not always the same as the point of use. Libraries purchase journals *on behalf* of their community of users. This characteristic of the market has the effect of insulating readers from the consequences of fluctuations in journal prices. Demand remains the same irrespective of these fluctuations (it is price inelastic).
- There is a lack of substitutability in the market. The Royal Academy of Engineering explains that: "journal articles are not interchangeable; their uniqueness is one of their essential qualities. The publisher therefore becomes the monopoly supplier of the articles published".[15] This is another factor that contributes to the price–inelasticity of demand.
- Libraries are atypical consumers. Rather than purchasing more goods until the benefit they receive is balanced by the cost, they spend up to the limit of their budgets. If prices rise, libraries will purchase fewer journals, if prices fall they will purchase more. Similarly, if research output rises but library budgets remain static, libraries will purchase a smaller proportion of total journal output. The ceiling on budgets means that publishers of "must have" journals can lift their share of spending and the market when they raise prices, as lesser journals are discarded by publishers.

13 Ev 313

14 Ev 70

15 Ev 246

Figure 1

The Publishing Process

Researcher submits an article to a journal. The choice of journal may be determined by:

- The journal's audience: is it the appropriate audience for the article?
- The journal's prestige: it is well known? Is it often cited?

The author is unpaid, but may pay "page charges" (see terminology)

The journal selects two or more appropriate experts to peer review the article, without payment

The peer reviewers assess:

- The quality of the research and the way it is reported
- The relevance of the article to the journal's readership
- Its novelty and interest
- Its content, structure and language

Feedback from the reviewers determines whether or not the article is accepted. Acceptance rates vary from journal to journal

The rejected article is returned to the author or

The accepted article is passed to the editors employed by the publishers, either in–house or freelance

The editors ensure that:

- The language of the article is clear and unambiguous (particularly if it has been produced by a non–native speaker)
- The standard style of nomenclature is adhered to
- Illustrative material is of a sufficiently high standard

Editors also establish live links in the electronic version to the references cited and to other material such as data sets

12. Where a journal exists in both paper and digital formats, the article is sent to the printer to produce a paper copy, and will be formatted for the online version of the journal

- The career and reputational motivations that drive researchers to publish ensure that they seek to publish in the most prestigious journal in their field, irrespective of that journal's price. Hence Professor Sir Keith O'Nions' observation that "I think it will be a very long time before a journal like *Nature* loses its immense prestige as a place to publish anywhere, for anybody in the world, even though it is a profit–making organisation".[16]

As Professor Spier from the University of Surrey told us: "scientific publications are not a commodity. They do not wax and wane in value as do the markets in silver or oil. Each publication constitutes an element in a self–supporting and growing entity that is the body of knowledge".[17] The peculiarities listed above mean that the market for scientific publications is not subject to the same market forces that influence markets for other goods, such as clothes or cars. The purchasers, libraries, are caught between the demands of readers on the one hand and of publishers on the other. The inelasticity of demand from their readers for access to journals leaves them with very little purchasing power when dealing with the publishers.

A mixed market

13. The total UK publishing industry has a turnover of at least £18.4 billion, making it the second largest publishing industry in Europe. It has more than 8,000 companies employing approximately 164,000 people.[18] Statistics on the UK STM publishing sector are less meaningful because STM publishing is international in scope. Researchers read articles published abroad that have some bearing on their work. The vast majority of STM journals are published in the English language: journals published in the US have the largest share of the market. The International Association of Scientific, Technical & Medical Publishers estimated that there are currently over 2,000 STM publishers worldwide, between them publishing over 1.2 million articles per year via approximately 16,000 journals.[19] UK based STM publishers include Reed Elsevier, Nature Publishing Group, Oxford University Press, Blackwell and T & F Informa.

14. Globally, in the STM field, the biggest commercial publishers by market share are Reed Elsevier, Thomson ISI, Springer, John Wiley and T & F Informa. Statistics on market shares are often given separately for the scientific and technical, and the medical markets because some of the larger publishers are more active in one of these fields than the other. For the purposes of this Report, however, unless otherwise specified, all statements and statistics quoted apply across the entirety of the STM sector. Figure 2, opposite, breaks down the STM information market by percentage of market share. The American Chemical Society, with a 3.6% share of the market, is the only society publisher that is able to feature in terms of market share alongside the major commercial players.

16 Q 357

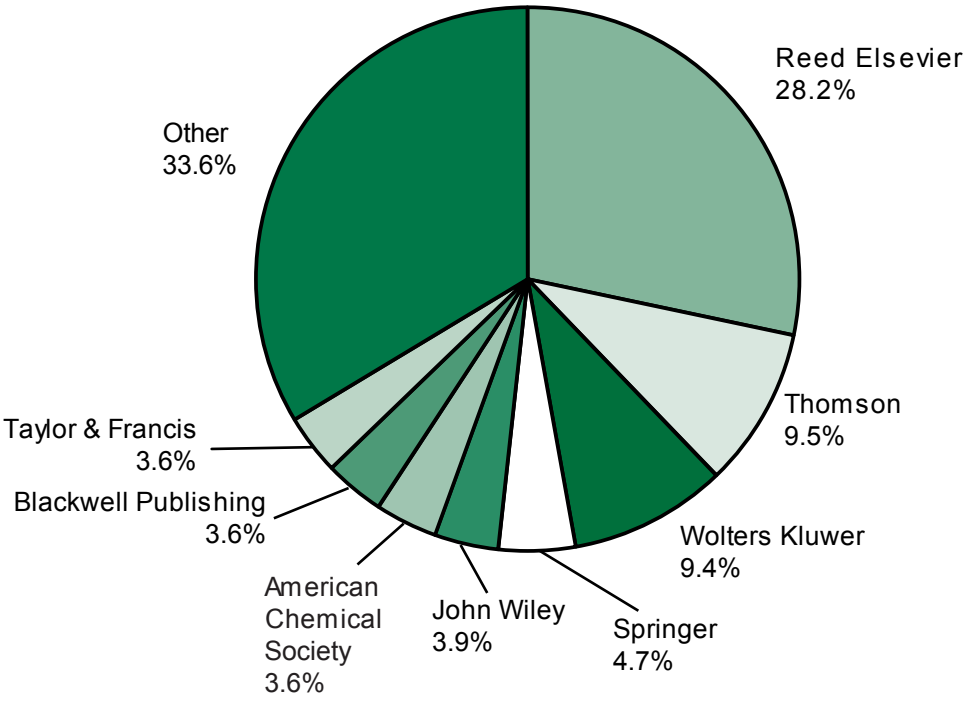
17 Ev 231

18 www.dti.gov.uk

19 Ev 318

Figure 2

Global Market Shares of STM Publishers, 2003



EPS Ltd, June 2004

15. The Association of Learned and Professional Society Publishers (ALPSP) estimated that there are currently 9,250 peer–reviewed journals published globally by learned societies, professional associations and university presses.[20] They range from the very small, with an output of only one journal of narrow interest, to the very large, such as the American Chemical Society in the US or the Institute of Physics Publishing (IoPP) in the UK. Many society publishers simply aim to cover the costs of their publishing activities, which serve to disseminate the work of society members. Those that make a surplus are bound by their charitable status to re–invest the money in the society's activities. A number of submissions pointed out that, were the publishing operations of learned societies to cease, many would struggle to survive. The British Pharmacological Society, for example, told us that "in 2002—03 we spent over £850,000 on promoting and advancing pharmacology. Nearly £800,000 of this came from our publishing activities. Without this income we should either have to raise funds in a different way or cease to provide most of our current activities".[21] The impact of changes to the market on learned societies are considered in detail in paragraphs 178—182 of this Report.

16. An increasing number of learned societies use the large commercial publishing houses to publish their journals, often because the costs of keeping such a small–scale operation in house would be greater than the income received. Blackwell Publishing, for example, publishes a number of journals on behalf of societies, including the Society for Applied Microbiology, which described itself as having "a good, long standing relationship" with

20 Ev 88

21 Ev 221

Blackwell.[22] John Wiley stated that "about a third of our journals are published on behalf of or in affiliation with learned societies – we proactively work with our society partners to develop their titles in the light of scientific progress, as new disciplines emerge and research foci shift".[23] In most cases, pricing policy is determined by the society, rather than the publisher. The Mammal Society noted that the trend towards outsourcing society publishing activities helped societies to gain a foothold in the market where, otherwise, they would be "incapable of protecting their market against aggressive marketing by the large publishers".[24] Nonetheless, several learned societies have resisted the transfer of their publishing activities to commercial outfits. The British Entomological and Natural History Society, for example, felt that outsourcing tended to increase the power of commercial publishers to raise prices.[25]

New developments

17. In very recent years, Government investment in scientific research has increased dramatically. Increased research volume has generated increased outputs, often in the form of scientific articles. The Publishers Association told us that 84% of the 65,000 articles originating in the UK in 2002 derived from publicly–funded research.[26] In the UK, the Society of College, National and University Libraries (SCONUL) have reported that "the mean number of journal titles received by its member libraries in 1993—94 was 3,976; the nearest equivalent figure for 2001—02 is 6,489".[27] Over the same period, library budgets have suffered within academic institutions. Most submissions agreed with the Association for Information Management (Aslib) that library budgets "have not been keeping pace with the rapid changes which have been taking place in journal publishing, the increased costs, and the significant growth in output of research material".[28] Library funding is dealt with in Chapter 5 of this Report. The growing disparity between the growth in research output and the money available to purchase journals has meant that libraries have had to cut subscriptions in order to keep within their budgets. This, in turn, forces publishers to lift prices of certain journals to cover overheads, creating a vicious circle and difficulties in accessing such journals.

Digitisation

18. The market for scientific publications has undergone a technological transformation in recent years. The change is most immediately apparent in the number of journals that are now available in digital form. Although most digital journals are published alongside a print version, it is becoming increasingly likely that some journals will be published in digital form only. Many already have digital–only sections. Mr David A. Rew, a Consultant Surgeon at Southampton University Hospitals, notes that "there are some areas of science, for example high energy physics and astrophysics, where this may well be the case, and all

22 Ev 189

23 Ev 129

24 Ev 157

25 Ev 160

26 Ev 97

27 Ev 305

28 Ev 328

publishers and editors keep the matter under review. For the present, both models are complementary".[29]

19. The digitisation of journals brings many advantages, notably it:

- assists the processes of collation, preparation and distribution of content;
- reduces the cost of distributing published material (although this is not the case whilst digital models operate alongside print counterparts);
- presents material in a wide range of formats, enabling readers to use it more effectively;
- provides new ways of accessing historical data – archives can be found at the click of a mouse instead of on a library shelf;
- enables the presentation of new types of material – for example, links to data sets and citation tracking systems – that will reduce duplication of effort and speed up the process of research;
- enables publishers to compile more accurate statistics on usage patterns and user bases, helping them to tailor their products to the market;
- enables more effective searching, for example through Elsevier's ScienceDirect platform (ScienceDirect offers full text access to 1,800 Elsevier journals plus navigation to over 6,000 titles from other publishers. Scopus and Scirus provide abstracts and indexing for 14,000 journals); and
- increases access for users in the developing world, by making articles available online.

20. Some of the benefits of digitisation have yet to be realised. Although full–scale digitisation should offer efficiency gains in the long term, whilst publishers are still producing both printed and digital journals and are investing in the development of new technologies, their costs are higher than they were before. Digitisation also brings new problems to the surface. Chapter 8 looks in detail at the issue of digital storage and the need to develop and maintain a secure archival environment for digital publications. Some witnesses also expressed concern about the over–reliance of a younger generation of scientists on material that is available online. The UK's National Electronic Library for Health, for example, was concerned that "with more and more information becoming readily available via the Web availability may take precedence over quality when deciding which information to use".[30] Despite these reservations, the vast majority of submissions to the inquiry expressed great enthusiasm for the potential of new technologies to significantly improve the provision of scientific information.

29 Ev 76

30 Ev 352

The role of the Government

21. The UK Government's interest in STM publishing derives from a variety of its functions. The Government funds a significant proportion of the research carried out in the UK. Through the Higher Education Funding Council for England (HEFCE), the Department for Education and Skills (DfES) pays a block grant to UK universities, which contributes to the full economic costs of research and teaching and from which a substantial proportion of university library funding derives. The Department for Culture, Media and Sport (DCMS) funds the British Library, which is one of the six legal deposit libraries in the UK and Ireland charged with maintaining an archive of all the material published in the UK and Ireland. It also funds national museums which conduct their own research and house their own libraries. The Department of Trade and Industry (DTI) supports the UK publishing industry as one of its business support activities.

22. It is not clear to us that the roles of the Office of Science and Technology (OST) and DTI are synchronised on the issue of scientific publications. Through the Research Councils, OST has a duty of care to the UK research community. As articulated by Research Councils UK (RCUK) this duty includes the conviction that "the peer reviewed and published output of their funded research must be made available as widely and rapidly as possible to academic and other communities".[31] Through its Digital Content and Publishing Unit, DTI has business relations responsibility for the publishing sector: its "key function is to promote the competitiveness of the sector through dialogue with key companies and intermediaries to ensure that government policies provide an environment for these industries to succeed".[32] It cannot simply be assumed that research will thrive, that publishing will succeed and that the UK taxpayer will get best value for money in the same environment. As the Royal Society of Chemistry pointed out, some of the changes being proposed to further the aims of the research community could have ramifications for the publishing sector: "UK plc has much to lose from destabilising its very successful journal publishing industry in terms of employment, exports and revenues to the Exchequer".[33] We attempted to pursue the issue of this potential conflict of interests with the Director General of the Research Councils (DGRC), Professor Sir Keith O'Nions, when he gave oral evidence to us on behalf of both OST and DTI on 5 May. Sir Keith told us that "in terms of perception of a conflict of interest, I do not think I have one".[34] As the session unfolded we began to suspect that the DGRC was unconcerned about a conflict of interest because he could not really speak on behalf of the publishing interests represented by DTI. **It is discouraging that the Government does not yet appear to have given much consideration to balancing the needs of the research community, the taxpayer and the commercial sectors for which it has responsibility.**

23. During the course of our inquiry it became clear to us that the issue of scientific publications is extremely low on the Government's agenda. Professor Sir Keith O'Nions told us that "the feeling in DTI and OST at the moment is probably that a middle–ground level playing field is the right position for us to be".[35] We suspect that the "middle–ground

31 Ev 293

32 www.dti.gov.uk

33 Ev 210

34 Q 328

35 Q 328

level playing field" approach is a consequence of the scant attention given by Government thus far to the task of formulating a strategy or a policy on scientific publications. Rama Thirunamachandran from HEFCE told us that "I think we do need a strategic approach nationally to harness all our research information resources to best use".[36] We can only agree with him, although we were somewhat concerned that a strategy had not already been put in place. The DGRC observed that "the interest that your Committee has taken in this subject has given some stimulus and momentum to broader debates in Government".[37] We welcome this debate within Government but find it worrying that it has taken a select committee inquiry to stimulate a joined–up approach to this important issue.

24. This Report draws a clear distinction between the activities of Government and those of private industry. Although the inquiry has required us to examine the publishing industry in some depth it is not our intention to make recommendations to private sector companies. We can, however, make recommendations to Government and its associated bodies. Several memoranda expressed the view that Government had no role to play in the field of STM publishing at all. The Royal Society of Chemistry, for example, noted that "it is the competitive and well–functioning market, and not governments, that must choose which business models and which publishers are best equipped to stay apace of the ever–increasing demand for information exchange".[38] Our investigations, however, have led us to believe that there are several areas in which Government could take action to improve the operation of the market for STM publications to the benefit of the research and student community as well as the public more generally. **We are convinced that the amount of public money invested in scientific research and its outputs is sufficient to merit Government involvement in the publishing process. Indeed, we would be very surprised if Government did not itself feel the need to account for its investment in the publishing process. We were disappointed by how little thought has been given to the issues within Government thus far and hope that this Report will prove to be a catalyst for change.**

The international context

25. Throughout the course of this inquiry, the Committee has been mindful that the issues it has been exploring are international in scope. The UK STM publishing industry, although a significant sector within the UK, represents only a fraction of the global market. As the Association of Learned and Professional Society Publishers (ALPSP) told us "the majority of UK authors are published in non–UK journals, and the majority of UK journal sales are to non–UK customers".[39] The British Pharmacological Society warned us that "any actions by the British Government will affect only the British market, and may have unintended consequences for the health of British science and UK–based journals".[40] These "unintended consequences", which will be explored in paragraphs 188—189, are indeed vitally important considerations for the UK Government when it decides how to act. Nonetheless, we cannot agree with those submissions that cite the international dimension

36 Q 10

37 Q 351

38 Ev 209 (

39 Ev 449

40 Ev 229

as a reason for Government inaction. Just as STM publishing is global, so is the debate surrounding it. We received evidence from many non–UK based organisations and conferences, among them the World Summit on the Information Society (WSIS), the Council of Australian University Librarians, the Canadian Association of Research Libraries and the International Association of Scientific, Technical and Medical Publishers. The extent of the international interest in our inquiry has convinced us not only that the issues we have been considering are of international interest and importance but also that there is pressure for change in other countries as well as the UK. **The backdrop of international interest and momentum for change sets the scene for the UK Government to take a lead in establishing an efficient and sustainable environment for the publication of research findings.**

26. The UK has been party to a number of international agreements relating to STM publishing. A meeting of the Organisation for Economic Co–operation and Development (OECD) Committee for Scientific and Technological Policy that took place on 29—30 January 2004 agreed that "co–ordinated efforts at national and international levels are needed to broaden access to data from publicly funded research and contribute to the advancement of scientific research and innovation".[41] To this end 34 countries, including the UK, signed up to the declaration on access to research data from public funding summarised in figure 3 opposite.

27. In December 2003, a convention of the World Summit of the Information Society, a summit of the UN, adopted several recommendations relating to the publishing industry, and produced a Declaration of Principles and a Plan of Action. In these documents, the signatories, including the UK, declare themselves to be strongly in favour of "Open Access". Evidence submitted to this inquiry by WSIS notes that there is no obligation for countries to enforce the recommendations of the summit. However, it also states that "it would be quite difficult for any government who undersigned the WSIS texts to take decisions that go against the Declaration of Principles and the Plan of Action".[42] The Government officials we met appeared to be unaware of the existence of the summit.[43] It is unlikely, therefore, that the Declaration of Principles and Plan of Action have had any impact on UK policy to date.

28. **We will give a copy of this Report to the UK delegates to the Culture, Science and Education Committee of the Parliamentary Assembly of the Council of Europe. We hope that the Committee will pursue the issues raised here, both within the Council of Europe and on a wider international stage.**

41 www.oecd.org

42 Ev 282

43 Q 369

Figure 3

On 30 January 2004, 34 governments declared their commitment to:

- **Openness**: balancing the interests of open access to data to increase the quality and efficiency of research and innovation with the need for restriction of access in some instances to protect social, scientific and economic interests.
- **Transparency**: making information on data–producing organisations, documentation on the data they produce and specifications of conditions attached to the use of these data, available and accessible internationally.
- **Legal conformity**: paying due attention, in the design of access regimes for digital research data, to national legal requirements concerning national security, privacy and trade secrets.
- **Formal responsibility**: promoting explicit, formal institutional rules on the responsibilities of the various parties involved in data–related activities pertaining to authorship, producer credits, ownership, usage restrictions, financial arrangements, ethical rules, licensing terms, and liability.
- **Professionalism**: building institutional rules for the management of digital research data based on the relevant professional standards and values embodied in the codes of conduct of the scientific communities involved.
- **Protection of intellectual property**: describing ways to obtain open access under the different legal regimes of copyright or other intellectual property law applicable to databases as well as trade secrets.
- **Interoperability**: paying due attention to the relevant international standard requirements for use in multiple ways, in co–operation with other international organisations.
- **Quality and security**: describing good practices for methods, techniques and instruments employed in the collection, dissemination and accessible archiving of data to enable quality control by peer review and other means of safeguarding authenticity, originality, integrity, security and establishing liability.
- **Efficiency**: promoting further cost effectiveness within the global science system by describing good practices in data management and specialised support services.
- **Accountability**: evaluating the performance of data access regimes to maximise the support for open access among the scientific community and society at large.

They also pledged to:

- Seek transparency in regulations and policies related to information, computer and communications services affecting international flows of data for research, and reducing unnecessary barriers to the international exchange of these data;
- Take the necessary steps to strengthen existing instruments and – where appropriate – create within the framework of international and national law, new mechanisms and practices supporting international collaboration in access to digital research data;
- Support OECD initiatives to promote the development and harmonisation of approaches by governments adhering to this Declaration aimed at maximising the accessibility of digital research data; and
- Consider the possible implications for other countries, including developing countries and economies in transition, when dealing with issues of access to digital research data.

www.oecd.org

29. Scientific publishing has been discussed at a European level for a number of years. In October 2003 the European Commission adopted the Berlin Declaration, which called for increased access to knowledge. More recently, on 15 June 2004, the European Commission launched a study of the economic and technical evolution of the STM publishing markets in Europe. Its aim is to "determine the conditions required for optimum operation of the sector and to assess the extent to which the Commission can help to meet those conditions".[44] We look forward to the findings of this study.

44 "An effective scientific publishing system for European research" (IP/04/747), Brussels, 15 June 2004

3 Accessibility of research

Patterns of access

30. Some individuals subscribe to journals that they regularly read. For those seeking access to an article in a journal to which they do not subscribe, the first place they would look would be their library. Most researchers are affiliated to an academic institution or private sector company that carries subscriptions to a number of journals. Access can also be gained through local libraries or one of the six UK legal deposit libraries. If the journal is not available through the library, the articles required by the user can be obtained through an inter–library loan; through the British Library's Document Supply Service, run from Boston Spa; or on a pay–per–view basis from a publisher. All of the above methods require payment on the part of the user: the British Library's Document Supply Service generates a margin for the British Library; inter–library loans are exchanges of content between libraries and do not generate a margin. The British Library currently charges £8.65 for an inter–library loan: the user's library decides how much of that cost to pass on to the user.[45] Articles purchased on a pay–per view basis cost anything from £5 to £30. The variety of available methods used to access journals means that overall access levels are high. John Wiley & Sons stated that "the vast majority of people who want to access our material can do so with ease". It estimated that only 10% of potential users are unable to gain access to its material, for whatever reason.[46]

31. The British Library's Document Supply Service supplies over 1.8 million scientific articles a year, over 90% of which are supplied within 48 hours.[47] In December 2003 it introduced a Secure Electronic Delivery service that "gives access to 100 million documents which can now be delivered electronically to researchers' desktops".[48] In their evidence, the Consortium of University Research Libraries (CURL) and SCONUL stressed the importance of "a continuation of [the British Library's] comprehensive document supply service, serving the information requirements of scholars and researchers".[49] With the relatively modest prices involved, particularly when compared to the price of pay–per–view, the Document Supply Service provides a cost–effective method for the reader to gain access to articles in journals to which they or their library do not subscribe. Nonetheless, the British Library told us that the financial viability of this service had been threatened by the advent of bundling deals that give subscribers access to the entirety of a publishers' catalogue, thus reducing the need for Document Supply. As discussed in paragraphs 56—68 of this Report, although bundling deals increase the range of journals to which a user has access, they do not necessarily offer value for money. **The British Library's Document Supply Service is an efficient and cost–effective method of providing access to articles in scientific journals. The decline in demand for Document Supply notwithstanding, we are persuaded that the service provides a valuable alternative route for users who**

45 Q 271. Note that the inter-library loan is not the same as the British Library's Document Supply Service.

46 Ev 131

47 Q 272

48 Ev 356

49 Ev 127

would not otherwise have access to the journals that they needed. We recommend that the Government takes steps to protect the service.

32. The digitisation of journal provision has altered patterns of access. Many submissions complained that the market had not yet adapted to the digital environment. There is some evidence that subscriptions to digital journals are still being predicated on the model used for subscriptions to print journals. Publishers traditionally sold libraries a set number of copies of each issue of print journals as part of the terms of their subscription. All library users were able to read those print copies within the library precincts. Some publishers have used the same numerical basis for subscriptions to their digital journals, providing libraries with a limited number of digital "copies" of each title. The Eastern Confederation of Library and Knowledge Services Alliance (ECLaKSA) told us that "the publishers control access to the journal titles by single IP address recognition. […] This in turn means that libraries can only provide access to a limited number of users via one PC".[50] The University of Hertfordshire echoed this complaint, writing that pricing is "based on the number of simultaneous users with significant differentials between single user and even low numbers (4–5) of concurrent users, when in practice actual usage patterns and service requirements fluctuate at different times of day from no one using the materials to a number of concurrent users".[51] The Joint Information Systems Committee (JISC) is a body jointly established by the four UK higher education funding bodies and the Learning and Skills Council to provide strategic guidance, advice and opportunities to use ICT to support teaching, learning, research and administration. One of its functions is to undertake initiatives for the licensing of electronic journals on behalf of the higher and further education sectors. **We are not convinced that the publisher practice of granting each subscriber access to a set number of digital "copies" of a journal is either effective or necessary. We recommend that the Joint Information Systems Committee strongly argues the case against such restrictive practices when it negotiates the terms for the next national site licence with publishers.**

33. The digital environment enables access to research findings in a range of formats other than the traditional article. Digital articles can include video clips and links to sets of primary data. We heard from Dr Nigel Goddard of Axiope Limited, a spinout from Edinburgh University that provides the tools needed for researchers to manage and share their primary research data, about the advantages of making primary data sets available with research findings: "[researchers] see the possibilities for using it to share information within collaborations. […] the example to look at is the genomic project where scientists did contribute their data to a community wide database and as a result […] we have transformed biomedical science completely".[52] It is envisaged that the sharing of primary data would prevent unnecessary repetition of experiments and enable scientists to build directly on each others' work, creating greater efficiencies and productivity in the research process. From 1 October 2003, the National Institutes of Health (NIH) in the US adopted a requirement for the data from all its research grants to a value in excess of $500,000 to be published. In the UK, the Medical Research Council (MRC) states that it expects all MRC–funded researchers "to make their research data available in a timely and responsible

50 Ev 212

51 Ev 314

52 Q 200

manner to the scientific community for subsequent research with as few restrictions as possible".[53] However, Dr Goddard told us that relatively few researchers exploited the new technologies to make their research data available and concluded that this was partly due to a lack of incentives within the system.[54] **We congratulate the Medical Research Council on its support of the principle that primary research data should be made available to the scientific community for subsequent research. We recommend that the Research Councils consider providing funds to enable researchers to publish their primary data alongside their research findings, where appropriate.**

Researchers and practitioners

34. Many researchers are affiliated to an academic institution and thus have access to all the journals subscribed to by their library. Some benefit from subscriptions purchased by their company. As a consequence, researchers tend to be satisfied with current levels of journal access. Such contentment is not an accurate reflection of the state of the market for scientific publications. The problems with the market are experienced, not by academics, but by librarians, who do the buying and manage the budgets. This issue is discussed in further detail in paragraphs 102—107 of this Report.

35. We received evidence that there are already two classes of library: those that can afford to maintain subscriptions, and those that cannot. The Scholarly Publishing and Resources Coalition (SPARC) Europe stated that "papers describing research funded by UK tax–payers can only be accessed by those lucky enough to work at an institution that can afford subscriptions to the relevant journals".[55] Yet this is a concern that does not appear to have filtered through to the majority of academics. One academic, Professor Williams of the University of Liverpool, even argued that "there is no reason at all why all Higher Education Institutions should have the same access to scientific publications. Not all institutions work at the cutting edge of science, technology and medicine, and many do not need access to the highest quality science publications".[56] We disagree. As Dr Matthew Cockerill of BioMed Central stated, "it is unjustifiably elitist to proclaim that none but those working at major well–funded institutions have the capacity to benefit from having access to the scientific literature".[57] **All researchers, regardless of the nature of their institution, should be granted access to the scientific journals they need to carry out their work effectively.**

36. Several memoranda outlined problems of access to digital journals for NHS users and other medical practitioners. When libraries subscribed to journals in print, NHS users were able to use their local academic library to gain access to the journals that they needed. Digital access has proved more restrictive for this particular group of users. Michael Worton from University College London (UCL) told us that UCL had a history of joint working with the NHS. All its biomedical libraries are currently, or are about to become, joint higher education (HE)/NHS libraries. Yet "NHS staff using HE libraries are precluded

53 www.mrc.ac.uk

54 Q 200

55 Ev 161

56 Ev 225

57 Ev 185

from access to electronic resources purchased by HE as a condition of the licence which HE signs from the commercial publisher. Consequently, the NHS has to purchase many of the same resources for the use of its staff".[58] Matthew Cockerill from BioMed Central agrees that "subscription barriers do significantly limit the access of NHS researchers and staff to online research, even when that research has been funded and carried out by the NHS".[59] The NHS in England and Wales has taken steps to implement its own central procurement procedure. It recently signed a major deal with three information providers to provide electronic knowledge resources for the NHS nationally for at least the next three years. The resources are being purchased as part of the National Core Content Project funded by the NHS Workforce Development Confederations. Although the deals will be an improvement on the current situation, it would be more efficient for the NHS and HE to implement joint procurement procedures. **We recommend that the Joint Information Systems Committee and the NHS work together to implement joint procurement procedures that reflect the close working patterns of NHS and the higher education sector and represent value for money for both.**

Teachers and students

37. Although journals are an essential tool for researchers, they are increasingly also being used for teaching purposes. The University of Hertfordshire, which has a strong emphasis on teaching, reported that digital licensing arrangements were rarely satisfactory for the purposes of teaching and learning. It told us that approximately 50% of publishers "prohibit, through their licensing terms, the circulation of their material to groups of students over university networks in such an intranet environment".[60] This was a particular problem for the University of Hertfordshire because of its need to import journal articles into its digital "Managed/Virtual Learning Environment". Part of the difficulty was perceived to lie with "the piecemeal approach dictated by the inconsistency of publishers' licences, makes it difficult for librarians to advise on what is permissible and for lecturers to know what they may and may not use in conjunction with their online handouts and learning materials".[61]

38. The Publishers Licensing Society is mandated by publishers to authorise the Copyright Licensing Agency to issue licences for the limited photocopying and scanning of printed copyright material, including for teaching purposes. However, the licences do not cover the reproduction of digital material: this is negotiated on an individual basis between the purchaser and the publisher within the terms of the digital journal licence.[62] In 1993, the Follett Report, on library provision, concluded that "publishers need to recognise that the use and manipulation of copyright material is inevitable in higher education, and that it is by no means always unreasonable or illegitimate. They must be pragmatic".[63] Although the situation with regard to print journals has improved, it is frustrating for university teaching staff that they are prevented from making optimum use of the teaching resources available

58 Ev 192

59 Ev 185

60 Ev 475

61 Ev 476

62 Ev 321

63 Joint Funding Council's Libraries Review Group: Report (The Follett Report), December 1993, para 250

to them in the form of digital journals. **Teaching is a crucial university function. Universities should be permitted, within reason, to derive maximum value from the digital journals to which they subscribe by using them for legitimate teaching purposes. We recommend that future licensing deals negotiated by the Joint Information Systems Committee explicitly include provisions to enable journal articles, whether print or digital, to be used for teaching purposes.**

The public

39. The public is increasingly seeking access to research findings through scientific journals. In particular, patients want to inform themselves about medical conditions and treatments that affect them. Dr Virginia Barbour, formerly Molecular Medicine Editor at *The Lancet*, saw this as a positive development because reading research articles could be a useful antidote to lurid reporting of research findings in the press: "even more serious broadsheet newspapers tend to prefer sensational news rather than dull but worthy research". She notes that the practice of "making information available only for a high fee at the point of access has the most severe repercussions for one particular group of end–users; patients".[64] It is difficult to find fault with the aim of fostering a more scientifically literate public. Nonetheless, in oral evidence we heard dissenting voices. Dr John Jarvis of John Wiley told us "let us be careful because this rather enticing statement that everybody should be able to see everything could lead to chaos. Speak to people in the medical profession, and they will say the last thing they want are people who may have illnesses reading this information, marching into surgeries and asking things".[65] We understand that many journal articles are esoteric and, by their very nature, inaccessible to large swathes of the public. Nonetheless, we cannot see what damage could be done by allowing the public to examine the articles for themselves. Unlike Dr Jarvis, the possibility of better–informed patients "marching into surgeries and asking things" does not fill us with horror. We are convinced that it is better that the public should be informed by peer–reviewed research than by pressure groups or research as it is reported in the media.

40. **It is not for either publishers or academics to decide who should, and who should not, be allowed to read scientific journal articles. We are encouraged by the growing interest in research findings shown by the public. It is in society's interest that public understanding of science should increase. Increased public access to research findings should be encouraged by publishers, academics and Government alike.**

41. In theory, members of the public have recourse to the same channels for journal access as researchers. They can gain access through personal subscriptions; through their local, perhaps local university, library; by using inter–library loans or document supply; or on a pay–per–view basis. Personal subscriptions to journals can be prohibitively expensive for the individual: Blackwell cited an average subscription price for an individual STM journal of £500.[66] Nature Publishing Group cited rates from £87 to £2,843.[67] Pay–per–view is also relatively expensive, as is shown above.

64 Ev 70

65 Q 19

66 Unprinted answers to supplementary questions from Blackwell Publishing

67 Nature Publishing Group, *Price List 2004*, www.npg.nature.com

42. The commercial publishers we met told us that journal articles were readily available through public libraries. Sir Crispin Davis, Chief Executive of Reed Elsevier told us that "any member of the public can access any of our content by going into a public library and asking for it". Dr Jarvis of Wiley agreed with him.[68] These statements were contested by Vitek Tracz of BioMed Central who set down a challenge: "try it. I do not advise you to try it".[69] Our experience tells us that, whilst it is in theory possible for members of the public to gain access to specific journal articles via their public library, such libraries do not tend to stock a wide range of journal titles. However, public libraries can obtain photocopies of articles on behalf of the user, assuming that the user has the bibliographic and searching tools available to enable them to identify articles that they need. If they do not have access to the article itself, it is unlikely that they will have access to the relevant search tools. Even if the user is able to identify the article that they need, it can take as long as a week to arrive. This is acceptable only if the user does not need the article immediately. It is also likely that public libraries would be unable to cope with more than the occasional request. **We are not convinced that journal articles are consistently available to members of the public through public libraries.**

43. Much of the problem with public access to journals seems to be a consequence of digitisation. Brian Stuart McBeth, a non–university user of the Bodleian Library in Oxford, informed us that "institutions are bound by restrictive licence terms negotiated and entered into by the Department of Education with Athens [see below]. The terms are explicit in that access is only authorised to current students and members of the staff of the University".[70] The Athens Access Management System was originally designed and developed by the National Institute of Statistical Sciences to provide "single sign–on" to information services for the UK HE sector. The service is supported by JISC. Its use by some publishers and libraries to limit the number of library users able to read digital journals to university members only means that some other "*bona fide* readers […] are denied access to online journals".[71] The University of East Anglia is dissatisfied with the limitations imposed on its provision of journals to the public, writing that it is "restricted in giving access […] in our regional role as a major source for detailed scientific information/education to the public. […] Hardcopy allowed equal access (provided you could understand it), online presupposes privileged access".[72] In oral evidence Di Martin from the University of Hertfordshire and Peter Fox from the University of Cambridge agreed that licensing arrangements for digital journals meant that "walk–in" library users had more restricted journal access than they did with paper journals.[73]

44. The digitisation of journals has enabled both publishers and libraries to monitor usage levels, but it has also given them the means to police usage more closely. Some users who could legitimately gain access to print publications through their library are now prevented from accessing the digital version of the same journals by restrictive access agreements. **Digitisation should facilitate, not restrict access. We recommend that the next national**

68 Qq 65, 19

69 Q 160

70 Ev 421

71 As above

72 Ev 204

73 Qq 234-8

site licence negotiated by the Joint Information Systems Committee explicitly provides for all library users without an Athens password to access the digital journals stocked by their library.

The developing world

45. Whilst libraries in the developed world are struggling to purchase access to all the scientific publications they need, subscriptions are prohibitively expensive for institutions in the developing world. One witness, Paul Pinter, told us that this could lead to "an increasing marginalisation of science and scientists in poorer countries, with a growing gulf in technological proficiency and economic development between rich and poor".[74] It is vitally important that the technological gap between developing and developed countries is narrowed. Scientific journals have a key role to play in ensuring that this takes place.

46. There are a number of schemes designed to give free, or very low cost, access to journals to developing countries. Three of the most well–known are:

- The Health Inter–Network Access to Research Initiative (**HINARI**) provides free or nearly free access to the major journals in biomedical and related social sciences to public institutions in developing countries. The scheme incorporates over 2,000 journals from 28 publishers, including: Blackwell, Elsevier Science, the Harcourt Worldwide STM Group, Wolters Kluwer International Health & Science, Springer Verlag and John Wiley. Public institutions in two lists of countries, based on GNP per capita, can sign up for HINARI. Institutions in countries with GNP per capita below $1,000 are eligible for free access to the literature. Institutions in countries with GNP per capita between $1,000–$3,000 are eligible for access at reduced prices.

- The Access to Global Online Research in Agriculture (**AGORA**) scheme, sponsored by the Food and Agriculture Organization of the United Nations, and launched in October 2003, provides access to more than 400 key journals in food, nutrition, agriculture and related biological, environmental and social sciences.

- The International Network for the Availability of Scientific Publications (**INASP**) is a co–operative network of partners, established in 1992, aiming to improve world–wide access to information. Its Programme for the Enhancement of Research Information (**PERI**) provides access to over 5,000 full text online STM, social science and humanities journals.

47. **Publishers are to be commended for signing up to laudable schemes such as HINARI, AGORA and INASP–PERI. We hope that the provision of free and low–cost access to scientific publications for institutions and researchers in developing countries will continue to be a significant aspect of the way that they conduct their businesses.**

48. There is some concern that digital journals are inaccessible to developing countries, which may not have the technological infrastructure to receive and distribute them effectively. Sir Crispin Davis told us that moving to a digital–only environment "would

74 Ev 67

have the result of reducing accessibility to scientific research because it is only available on the internet. […] globally it would exclude over 50% of scientists".[75] We are not convinced that this is the case. The distribution of paper copies of journals is expensive and requires extensive logistical infrastructure. Digital provision may, in fact, be more suited to the needs of developing countries because it is cheaper and more immediate. Dr Harold Varmus, of the Public Library of Science (PloS) told us that "while not every worker may have a desktop computer, every institution has a desktop computer and you can download the appropriate articles. […] in a place like Bamako in Mali […] where there is almost no access to papers unless you travel to France or the States, this is a revolutionary change which they welcome with open arms".[76] On a recent visit to Malawi we heard that Malawi had a small but significant and growing level of ICT infrastructure. The development of ICT capacity was seen as key to enabling researchers to accede to research networks via the internet. By using the internet, researchers in the developing world became more aware of the range of articles being published in their field. ICT also facilitated access to journals, providing that they were affordable. The relatively low levels of ICT in the developing world comparative to the West is not an argument against digital journals, rather it highlights the need for further development of ICT capacity to fully exploit the potential of digital technologies. This issue is explored further in paragraphs 160—1679. **The digitisation of journals has the potential to greatly increase access to research findings for researchers in the developing world.**

75 Q 65

76 Q 180

4 The cost of journal provision

Journal pricing

49. Journal prices are important because they have an impact on access to publicly–funded research findings. If libraries and other subscribers can no longer afford to maintain journal subscriptions, some users may be denied access to the publications that they need, or at least access will become more difficult. Rising STM journal prices also have an impact on the library's provision of other information. In order to afford subscriptions, libraries may have to cut back on their provision of monographs, textbooks and other types of material, including publications in the arts, humanities and social sciences.[77]

50. None of the evidence we received disputed the fact that journal prices have risen very steeply over the past decade, although some witnesses and memoranda contested the extent to which they had risen and had varying views about whether or not such increases were justified. The average price of an academic journal rose by 58% between 1998 and 2003, compared to a UK retail price index increase of 11% over the same period.[78] For the different period between 1990 and 2000, Blackwell's Periodical Price Indexes show an increase in average journal price of 184.3% in medical journals and 178.3% in science and technology journals.[79] The Chartered Institute of Library and Information Professionals (CILIP) reported that "between 1996—97 and 2000—01 the information resource budget of UK university libraries has decreased by 29% in real terms, while the average journal price over the same time period increased by 41%. The proportion of university library information resource expenditure on journals has increased from 47% to 52%, but this increase has failed to maintain the actual number of journal subscriptions".[80] Although all these statistics refer to different periods of time, a clear pattern emerges of increasing prices against decreasing library budgets. Evidence we received from the American Association of Law Libraries and a group of other contributors told us that, in the US, the typical research library was forced to cut the number of journals to which it subscribed by 7% and to cut book purchases by 17% between 1986 and 2000.[81] Publishers frequently justify increasing prices on the basis of rising costs. This is discussed in paragraphs 71—83.

51. There were some discrepancies in the pricing data presented to us. We heard from Imperial College London that they had "recently received an invoice for our subscription to the Nature e–journal bundle, renewal for which falls due in June 2004. Our bill for the 14 titles making up the core of the collection has increased by 52%". Nature Publishing Group (NPG) justified the increase on the basis that their e–journals had originally been underpriced and the high cost of making them COUNTER compliant.[82] Imperial argued that "neither of these seems to us, or to other library colleagues, to justify the level of

77 See, for example, memoranda submitted by the George Green Library, University of Nottingham, Ev 213, and the National Library of Scotland, Ev 250

78 Ev 121

79 www.swetsblackwell.com

80 Ev 411

81 Ev 166

82 COUNTER (Counting Online Usage of Networked Electronic Resources) is an international initiative designed to facilitate the recording and exchange of online usage statistics. Publishers can opt to sign up to its Code of Practice.

increase being proposed".[83] Despite the evidence of substantial year–on–year price increases, Reed Elsevier insisted that their prices were decreasing in real terms: "average cost for a retrieved article for UK users of ScienceDirect has fallen from £4.57 to £1.69 since 2001, a reduction of 63%. We estimate the cost to customers per article downloaded will be less than £1 within two years".[84] Blackwell Publishing told us that the price per article of their published content stood at only £0.025.[85]

52. The low and falling prices quoted by Reed Elsevier and Blackwell can be explained by differences in reporting methods. Three main factors are at play:

i. Journals are frequently sold by publishers in bundles. Publishers typically include a core of titles within the bundle, with some or all of the remainder of their catalogue included for an extra sum of money. Thus, for a library that purchases the entire bundle, the price per article is significantly less than it would be if they were to purchase each journal separately. However, the library does not necessarily need or want all the journals included in addition to the core journals in the bundle. The price per article is low partly because libraries are paying for some material that is neither needed nor used. This is discussed further in paragraphs 56—68.

ii. The back catalogue is sometimes a factor in the calculation used to ascertain the price per article of a publisher's content. Access to this is often included in the total price for a journal bundle. In many cases, the library has already paid a subscription for the original print or digital copy of each of the journals included in the back catalogue. The inclusion of the back catalogue in calculations of price per article thus distorts perceptions of how much subscribers pay for *new* journal articles. Access to back issues is discussed in paragraph 61.

iii. The volume of scientific articles has increased greatly in the past decade, both in terms of the total number of articles and journals and in terms of length per article. In oral evidence, Professor Sir Keith O'Nions told us that "value for money is increasing, given the total volume of published material is increasing".[86] Nonetheless, increasing volume means that, were prices to remain constant, the price per article would appear to drop. The Public Library of Science (PLoS) told us that "many publishers justify subscription rates to potential subscribers in terms of the number of articles their journals contain, thereby creating an economic incentive for restricted–access journals to publish more papers".[87]

Quoting the price per article conceals the mounting price paid by libraries for access to STM journals. Libraries have a limited budget. This means that, even when the price per article is reduced, if the total price of journal subscriptions rises, libraries are unable to maintain subscriptions.

83 Ev 440

84 Ev 193

85 Ev 306

86 Q 337

87 Ev 452

53. Citing prices in units based on the individual article does not reflect the difficult situation faced by libraries and other subscribers to STM journals. **We recommend that the Joint Information Systems Committee develop an independent set of measures, agreed by subscribers and publishers alike, to monitor trends in journal pricing. This will help exert pressure on the publishing industry to self–regulate more effectively and will give libraries and other users greater knowledge when they are deciding which subscriptions to take.** In the US, the Performance Assessment Links in Science (PALS) venture works with publishers, authors and libraries on guidelines for self regulation within the publishing industry.

54. Discontent surrounding journal price increases has tended to focus on the high profit margins relative to other sectors that are enjoyed by some publishers. Reed Elsevier, for example, makes an operating profit of 34%, with profits after tax totalling nearer 17%.[88] Wiley had an operating profit of 29% in the first half of 2003.[89] These figures are substantially higher than the average operating profit of 22% across the academic, educational and professional publishing sector as a whole[90] and the average surplus of 17% cited for learned and professional society publishers.[91] Referring to the cost–justification argument employed by many publishers the Museums, Libraries and Archives Council told us that "while libraries accept there is an element of truth in these assertions, they do not believe they justify what they perceive as the large margins on journal publishing, especially for scientific, technical and medical journals where the prices are much higher than in other subjects and far outweigh the higher costs of colour printing and complex mathematical character sets".[92] **It is not for us to pronounce on the acceptability of the profit margins secured by private sector companies. Nonetheless, high publisher profit margins need to be set against the context of faltering library budgets and an impending crisis in STM journals provision. Cancelled journal subscriptions due to pressures on library budgets will have a negative impact on publishers. It is thus in everybody's interest for profit margins to be kept at a reasonable and sustainable level. We urge publishers to act on the recommendations of this Report to address these issues.**

55. It may, of course, be of benefit to the UK's trade balance if, in a global industry, UK–based publishing houses record high profit margins year on year. Nonetheless, as the George Green Library at the University of Nottingham pointed out, such profits "should be seen in the context of where the money has come from (often the public purse) and how it is used (invested or distributed to shareholders)".[93] We sought a Government view on the relationship between the public money spent on research and high publisher profit margins. Professor Sir Keith O'Nions told us in oral evidence that "I am not going to express a view on whether their profits are reasonable or unreasonable. It is a matter for Government, to decide whether it is an industry it chooses to regulate or not regulate".[94]

88 Q 80

89 Wolters Kluwer: 16.3%; Thomson: 24.5%

90 EPS Market Monitor June 2004

91 Ev 448

92 Ev 348

93 Ev 213

94 Q 337

We were baffled by this response, particularly because Sir Keith himself appeared before us as a representative of Government. **Government invests a significant amount of money in scientific research, the outputs of which are expressed in terms of journal articles. It is accountable for this expenditure to the public. We were dismayed that the Government showed so little concern about where public money ended up.**

Bundling

56. Many of the major commercial publishers sell their journals in "bundles", also known as "the big deal". A bundle is a non–negotiable group of journals that is supplied to the buyer at a fixed cost over a fixed period. Many publishers include all their journals within the bundle. In 2003 JISC completed negotiations on a national licensing deal, the National Electronic Site Licence Initiative (NESLi2). NESLi2 is a model licence for electronic access to journals negotiated to meet the needs specified by the UK library and user community. This is discussed in paragraphs 102—105.

57. The majority of bundling deals are struck with the larger commercial publishing houses. However, several organisations, including the Association of Learned and Professional Society Publishers (ALPSP), have created multi–publisher packages to help smaller publishers to compete with the bundles offered by large commercial publishers. Some learned society publishers also offer modest bundled deals: the IoPP, for example, offers an "all–journal" pack containing all 40 of its journals at a discounted rate.

58. Bundling deals were initially attractive to libraries because of a shortage of library funds for subscriptions. This led libraries to form consortia, taking out joint subscriptions to a wide range of journals packaged together in order to meet all of their growing and very different needs. SPARC Europe noted that "Big Deals are initially attractive to libraries as they allow the library to extend the range of material that they can offer to their researchers".[95] In written evidence Blackwell Publishing states that "the big deal and its variants are based on the low cost delivery to more readers with online systems and have enabled libraries greatly to improve access to journals".[96] Martin Richardson of Oxford University Press told us that bundling deals offered greater economies of scale.[97]

The impact of bundling on libraries

59. There is widespread discontent amongst libraries with bundling. The most common complaint was that bundling did not allow libraries to tailor their journal collection to the needs of their community. Professor Robert Cahn, a semi–retired academic from Cambridge University, told us that "almost all libraries are being forced (the word is not too strong) to subscribe for a huge basket of many hundreds of journals published by one and the same publisher; they cannot pick and choose".[98] Cambridge University Library reported that "libraries have to make cancellations elsewhere to finance the 'big deal scheme', thus putting the smaller journal publishers (learned societies and university

95 Ev 162

96 Ev 305

97 Q 121

98 Ev 81

presses) and the publishers of monographs at a more disadvantageous situation in the publishing market".[99] This occurs because library budgets are finite and do not increase in line with journal price increases, forcing libraries to choose between journal providers when the budget is under strain.

60. Publishers deny that bundling deals lack flexibility. Sir Crispin Davis of Reed Elsevier told us that libraries "are free to choose whatever they wish".[100] Blackwell Publishing offers flexible bundles, with a core of titles and the remainder on a pay–per–view basis. Dr Charkin of Nature Publishing Group envisaged even greater flexibility in future: "flexibility, I am sure, is going to come".[101] Whilst no library is forced to subscribe to a bundled deal, it is clear that many bundles make the most of the high reputation of some of their headline journals when negotiating subscription rates. Procurement for Libraries told us that "publishers can offer libraries a stark choice: pay a much higher fee for the 'big deal' or cancel. Few academic libraries will be able to refuse the 'big deals', because they contain so many must–have titles".[102] Although it would theoretically be possible for libraries to subscribe individually to the "must–have titles" contained within the bundle, we suspect that the cost of doing so is prohibitive, even where the library decides not to subscribe to the majority of lower–impact journals within the bundle. Answers to supplementary questions by Blackwell Publishing demonstrate that it is the most popular, core titles within the bundle that are the most expensive: "a typical UK university would subscribe to 150 of our journals at a cost of £75,000. Our standard deal is online access to an additional 500 titles for £7,995".[103] Thus, although there is no compulsion for libraries to subscribe to bundled deals, there is no financial incentive for them to do otherwise whilst the cost of the individual core titles remains high.

61. We learned that many libraries had fallen foul of tough cancellation clauses for bundled deals. The Council for the Central Laboratory of the Research Councils (CCLRC) complained that the no–cancellation clauses attached to their multi–year multi–journal deals with Elsevier and the American Chemical Society had "led to uneven cancellation of titles to make the budget balance. The result is that the little–used Elsevier and ACS titles must remain in our portfolio when the more popular titles by other publishers are cancelled".[104] The hazards of cancelling a bundled digital subscription also have consequences for continuing future access to journals covered by the subscription. The University of East Anglia noted that "many publishers are still failing to guarantee perpetual access to online archives covering the active years of a subscription, so that cancelling an online journal subscription brings the risk of losing the archive".[105] This view was reinforced by Peter Fox of Cambridge University Library who told us that, whereas paper journals remained on a library's shelf after the expiry of a subscription, "if you subscribe to an electronic version of that journal only and cease to subscribe, almost always

99 Ev 371

100 Q 64

101 Q 46

102 Ev 152

103 Unprinted answers to supplementary questions from Blackwell Publishing.

104 Ev 299

105 Ev 203

you lost access to everything that you have paid for in the past".[106] The risk of losing the archive is a disincentive for libraries to move to digital–only provision. It is unreasonable for publishers to deny libraries access to back issues to which they had previously subscribed when they cancel bundled subscriptions. Publishers should make the relevant back issues available either on CD ROM or via a discrete section of their website accessed by username and password. **We recommend that the Joint Information Systems Committee ensure that provision for continuing access in the event of cancellation to articles published during the subscription period is written into its next national licensing deal.**

Value for money?

62. The arguments for and against bundling turn on the question of value for money. Two measures are used to guage the value of a particular journal to the user community: level (volume) of usage and impact factor. Usage statistics have only become available since the provision of journals in digital format; they are obtained by counting the number of downloads from each online journal. Impact factors are "a measure of the frequency with which the 'average article' in a journal has been cited in a particular year. The impact factor will help you evaluate a journal's relative importance, especially when you compare it to others in the same field".[107]

63. One of the main justifications given by publishers for raising the price of electronic journal bundles is evidence of substantial demand for those journals to which libraries had not previously subscribed that are now included in the bundle. Martin Richardson of Oxford University Press (OUP) told us that "there are increasing amounts of usage coming from the journals which are participating in these schemes and lower cost per usage across the board".[108] In written evidence Blackwell Publishing stated that, as a consequence of bundling, publishers "report annual doubling of usage".[109] Reed Elsevier supplied statistics for usage growth between 2001 and 2003 for a representative selection of journals. These are reproduced in figure 4, opposite:

64. There are a number of countervailing arguments that have influenced our interpretation of the usage statistics cited by publishers as a factor in bundle price increases. Firstly, before journals were available electronically, publishers had no equivalent means of measuring usage patterns: citation indexes assessed the impact of a particular journal but could not determine how many times it had been read but not cited. As there is no comparator, it would be impossible to prove that electronic journal bundles have generated an increase in usage. Indeed, some of the evidence we have received contests the claim that bundling has increased usage across the entire spectrum of bundled journals. The Geological Society of London stated that "libraries are paying ever more substantial amounts of money for journals packages that contain titles they do not even want".[110] Procurement for Libraries reported that, "at the University of North Carolina, 28% of

106 Q 231

107 www.isinet.com

108 Q 122

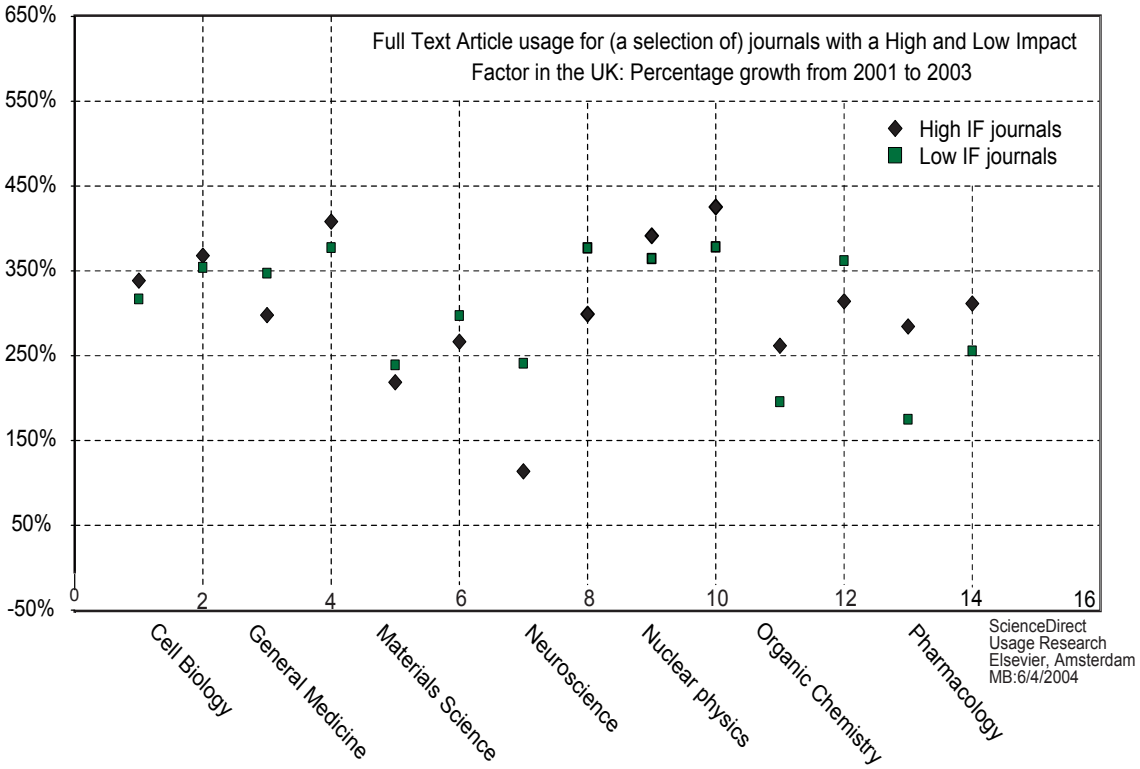
109 Ev 306

110 Ev 62

ScienceDirect titles accounted for 75% of downloads; 85% of subscribers to the Emerald "big deal" viewed less than 5% of the available titles. Such usage seems to replicate hard–copy patterns".[111] These statistics suggest that only a very small proportion of bundled journals are widely used. This does not necessarily contradict the statistics cited by Reed Elsevier: usage rates can show a marked increase whilst still remaining very low relative to the market as a whole. If, for example, a journal was downloaded 100 times in 2001, an increase of 450% would only signify a total of 450 downloads in 2003. Increased usage does not necessarily indicate significantly increased demand for non–core titles.

Figure 4

Usage growth for Reed Elsevier Journals between 2001 and 2003



Ev 474

65. Secondly, as is explained in paragraph 60 bundled journal deals are squeezing journals published by smaller publishers out of libraries. The effect of this is that all the journals in the bundle, including the lesser known titles, are disproportionately well exposed to the library's community of users. It is therefore impossible to determine the relative value of non–core titles within a bundle by comparing their usage rates to those of non–core journals that are not given similar exposure through inclusion in a bundle. Procurement for Libraries likens the disproportionate exposure of some journals to a "vicious circle: the journals in 'big deals' have higher and higher impact factors, to the detriment of journals outside 'big deals'".[112] The same is inevitably true of usage rates. Bundles provide a mechanism by which publishers can raise the profile, the usage and ultimately the impact of their lesser–known journals through increased exposure to the academic community. This in turn provides increased justification for including them in the bundle and for

111 Ev 152. Emerald is predominantly a publisher in the economics, business and social science fields.

112 As above

raising prices. The usage and citation statistics for these journals should be interpreted within the context of their high levels of visibility, particularly when escalating usage of low impact journals is cited as a justification for bundle price increases.

66. Finally, as they currently operate, libraries cannot pass the costs of increased journal prices due to increased usage on to the end user. The library has a fixed budget, regardless of how many and how often people use its resources. By employing usage statistics to help determine or justify prices, publishers are effectively penalising libraries for disseminating subscribed content widely within their user communities. **Increasing usage rates do not equate to an increased ability for libraries to pay for journal bundles. The recent availability of usage statistics should not be used as a justification for publishers to raise their prices.**

67. Usage does not equate to usefulness. Niche journals publish research of minority interest that is nonetheless of great importance to those who work in the field. The relatively low usage rates and impact factors of such journals do not reflect their value to their, sometimes very small, communities of readers. It is therefore very important that access to journals with lower usage rates and impact factors continues to be provided to the communities that need them. However, bundling ensures that those niche journals that are contained within the large–scale journal bundles offered by the bigger commercial publishers are sometimes provided at the expense of the unbundled niche journals published by smaller publishers. As Procurement for Libraries explains: "we have replaced must–have titles with must–have publishers".[113] This is not in the best interests of the communities that libraries serve because it does not reflect their individual needs. **Although libraries may aspire to provide access to every scientific journal, they cannot afford to do this. It is inevitable that difficult choices between a number of journals with lower usage rates and impact factors will have to be made. Nonetheless, these decisions should be made in response to local user needs rather than as a side effect of bundling.** In chapter 5 we discuss the ways in which collaborative library procurement procedures at a national level can be tailored to accommodate local needs.

68. We were told in oral evidence that bundling deals were on their way out. Bob Campbell of Blackwell Publishing said that "in our view it is a transitional model and we are moving to different sorts of pricing models".[114] The recent market analysis by Credit Suisse First Boston describes a likely consequence of "unbundling" subscription deals: "less well–regarded journals tend to have fewer papers submitted to them and consequently have higher profit margins [because rejecting papers costs more money]. What this means is that if libraries are successful at unbundling Reed Elsevier's low–impact–factor journals, it is likely to have a disproportionately negative impact on margins".[115] **Current levels of flexibility within the journal bundle do not present libraries with value for money. Whilst we accept that unbundling STM information carries risks for the main commercial publishers, only when flexible bundled deals are made available will libraries achieve value for money on their subscriptions. Furthermore, although we recognise that bundled deals may be advantageous to libraries in certain circumstances,**

113 As above

114 Q 45

115 Credit Suisse First Boson, *Scientific, Technical and Medical Publishing*, April 2004, p 4

we are concerned about the potential impact bundling may have on competition, given limited library budgets and sustained STM journal price growth. For a discussion of competition issues, see paragraphs 90—94.

Triple payment?

69. It has been argued that public money is used at three stages in the publishing process: to fund the research project; to pay the salaries of academics who carry out peer review for no extra payment; and to fund libraries to purchase scientific publications. As one of our submissions asked, "what other business receives the goods that it sells to its customers from those same customers, a quality control mechanism provided by its customers, and a tremendous fee from those same customers?"[116] A 2004 report by the investment bank Credit Suisse First Boston concluded that "we would expect governments (and taxpayers) to examine the fact that they are essentially funding the same purchase three times".[117] There is evidence that, if not the Government, its associated bodies are uneasy about the current situation. Research Councils UK (RCUK) told us that they were "concerned that the output from publicly funded research is handed free of charge to commercial organisations that appear increasingly to make it more difficult to gain access to publications derived from the same research".[118] Many libraries share the University of Hertfordshire's view that, because research has already been paid for from public funds, the money spent on journal subscriptions is essentially used to "buy this material back".[119] Of course, the university is not simply buying its own research back; it is paying for the service that publishers provide and for access to research carried out in other institutions across the globe. Nonetheless, there is cause for concern if libraries are no longer able to afford to pay to access the published record of research findings, including that of their own institutions.

70. Under the terms of their contract no researchers are explicitly required to carry out peer review. Nonetheless, they are encouraged to do so by their institutions and funding bodies, and such activity yields dividends for their own reputations and that of their departments. Our 2002 Report, *The Work of the Engineering and Physics Research Council*, noted that EPSRC offered modest incentives for university departments whose researchers carried out peer review work for the Research Council. Under the terms of the scheme, departments are paid £35 per review carried out by a staff member. We concluded that "the introduction of modest incentives for peer reviewers is an imaginative way of rewarding the contribution of peer reviewers to scientific endeavour".[120] By carrying out reviews, researchers add value to the services provided by publishers. Whilst it would be inappropriate to pay reviewers personally, some recognition, made to their department, of the value of their contribution would be welcomed, particularly in view of the fact that many researchers are paid from public funds. **Publishers should publicly acknowledge the contribution of unpaid peer reviewers to the publishing process. We recommend**

116 Ev 64

117 CSFB, p 3

118 Ev 294

119 Ev 190

120 Ninth Report of the Science and Technology Select Committee, Session 2002—03, *The Work of the Engineering and Physical Sciences Research Council* (HC 936), p 22

that they provide modest financial rewards to the departments in which the reviewers are based. These rewards could be fed back into the system, helping to fund seminars or further research.

Cost of publication

71. Journal price rises are frequently justified by publishers on the basis of high costs.[121] In order to assess this argument we sought to obtain an accurate breakdown of the costs of publication. We were hampered in this task by the diversity of the STM journals market: each journal has a set of individual traits that heavily influence the costs involved in its production, making generalization extremely difficult. In addition, we received mutually contradictory analyses from various publishers. For example, Nature Publishing Group (NPG) told us that "NPG adds value to the research it publishes" through substantial investment "in editorial IT systems, developmental editing, and the commissioning of related editorial material to provide context to the original peer reviewed papers it publishes".[122] This claim, made in similar terms by other commercial publishers, was flatly contradicted by Vitek Tracz of BioMed Central who told us that "I think that the role of publishers in the process of publishing scientific papers is wildly, incredibly exaggerated and overblown, completely out of proportion".[123] Both NPG and BioMed Central have a business interest in the way that the costs of publication are presented, which largely explains the difference in their evidence to us. In the light of such discrepancies in costs and reporting of costs, what follows is not a detailed cost analysis but is intended to provide a framework within which such analyses, carried out elsewhere, can be assessed.[124]

72. In our inquiry we focused on the cost *per article* of publishing STM research findings. This cost is variable because of a number of factors, particularly variations in rejection rates. Nonetheless it is possible to make some generalisations. Although there are problems with the Wellcome Trust's comparison of the costs of author–pays and subscriber–pays business models, which will be discussed in paragraph 146, we found the basic analysis of the costs of traditional subscriber–pays journal publishing that was given in their April 2004 report on *Costs and business models in scientific publishing* to be very helpful. The figures that they produced for this are given in table 1 opposite.

121 See, for example, written evidence from the Publishers' Association, Ev 101

122 Ev 466

123 Q 182

124 See, for example, The Wellcome Trust, Costs and business models in scientific publishing

Table 1

Cost element	Good–to–high–quality journal (cost in £*)	Medium–quality journal (cost in £*)
First copy costs per article	820	410
Other fixed costs per article	80	40
Variable costs per article	600	330
Total costs per article	1,500	780

Costs are converted from the US$ cited by the Wellcome Trust.[125]
The Wellcome Trust, Costs and business models in scientific publishing, p 15

First copy costs are the costs involved in making an article ready for publication. Other fixed costs relate to journals, but not individual articles, for example reviews, editorials and marketing, and to other non–product related costs. Variable costs vary according to output, and relate to the costs of subscription management, sales and distribution.

73. Amongst witnesses to the inquiry it was almost unanimously agreed that the area in which publishers added the greatest value to the publishing process was peer review. Peer review is a quality control mechanism used to allocate research grants and other awards as well as to decide which articles meet the standard required for publication. In publishing, experts in a given field are identified by the publisher, and sometimes the author, and are invited to review the article in question in terms of the quality of the research and the manner in which it is reported. Peer review is administered by the publisher and is perceived to be crucial to the integrity of the scientific process.

74. We heard some concerns that publishers tended to overstate the costs of peer review in order to justify high prices. As the Association of Learned and Professional Societies (ALPSP) told us "referees are rarely if ever paid, other than by covering their expenses; most journal boards feel that payment could risk tainting the process".[126] Given the lack of author payment the principle costs of peer review are associated with its administration and with the establishment of a network of contacts to supply the necessary experts. Again, we experienced a wide variation in estimations of the cost of peer review. The Public Library of Science (PLoS) told us that "for our future PLoS community journals (with staffing and publication standards similar to most society journals), we estimate that peer review will cost no more than US$200 [£100] per article".[127] Blackwell Publishing, however, told us that peer review cost an estimated £264 per accepted article, with the amount rising to £372 if editorial honoraria were taken into consideration.[128] NPG told us that peer review represented 66% of the total publishing costs per published article.[129] This compares to the 13% cited by Blackwell (based on a total publishing cost of £2, 091 per article).[130]

125 Currency conversion rate used throughout the Report: 1 USD = 0.551288 GBP

126 Ev 87

127 Ev 453

128 Unprinted answers to supplementary questions from Blackwell Publishing.

129 Ev 465

130 Unprinted answers to supplementary questions from Blackwell Publishing.

75. Any analysis of the costs of peer review is complicated by two factors. Firstly, journals have different rejection rates. For a widely–read journal such as *Nature*, the rejection rate can be as high as 90%, although ALPSP told us that a figure lower than 50% was more common.[131] This partly explains the discrepancy in costs cited by different publishers. Peer review costs more for a journal with a higher rejection rate because more articles are reviewed per article published. This variable makes it difficult to generalise about the costs of peer review. Nonetheless, the Wellcome Trust reports that "Rowland (2002) estimates reviewing costs at $200 [£110] per article published. Tenopir and King estimate review costs to be $20 [£11] per article reviewed. At $20 per article reviewed, a rejection rate of 90% would result in a reviewing cost of $200 per article published".[132] The rate of £11 per article reviewed strikes us as an acceptable basis for an analysis of costs.

76. The second complicating factor is that the costs that can reasonably be covered by the term "peer review" are nebulous and difficult to define. For example, NPG includes the costs of staff (43%), overseas travel (1%), editorial IT systems (2%), layout and design (3%), general administration (11%) and publishing and management (6%), within the total 66% of its costs that it attributes to peer review.[133] Although all these elements relate to the production of peer reviewed content, some of them cannot strictly be said to relate to the peer review process itself. We suspect that the costs of peer review are lower than is implied by the major publishers. This view is reinforced by the Wellcome Trust's recent cost analysis, which concludes that the figures for peer review "appear relatively low on the basis of perceptions reported in interviews with key figures in the publishing world".[134] **We do not doubt the central importance of peer review to the STM publishing process. Nonetheless, we note a tendency for publishers to inflate the cost to them of peer review in order to justify charging high prices. This lack of transparency about actual costs hampers informed debate about scientific publishing.**

77. Publishers have invested significantly in technologies designed to enhance the functionality of the journals they publish in a digital environment. This has inevitably added to their costs. Elsevier, for example, has invested £200 million in its online journal platform.[135] ScienceDirect is the world's largest electronic collection of STM full text and bibliographic information. It contains all Elsevier journals as well as some journals published by other companies. In written evidence, Reed Elsevier told us that "ScienceDirect allows users to perform complex searches and to retrieve full text articles, to link to other articles cited, to export content to local databases and citation management software, and to receive alerts when new journal issues are released".[136] The Biochemical Society told us that "publishers need to make profits […] to support the massive investment in new hardware and software systems, and processes, such as the provision of technical support for electronic journals, necessary to stay in business".[137] Publishers have also invested collaboratively to create a unique identity system for articles (DOI), a

131 Ev 87

132 The Wellcome Trust, Costs and business models in scientific publishing, pp 11-12

133 Ev 465

134 The Wellcome Trust, Costs and business models in scientific publishing, p 12

135 Q 72 and Ev 193

136 As above

137 Ev 177

collaborative search system (Cross Search) and a system for tracking articles throughout their online history (Cross–Ref). The technological advances funded by publishers were generally welcomed by academics. Professor Williams from Liverpool University told us that "I run a very large research group, I look at the functionality of my laboratories at the present time and I think they have been enhanced enormously in the last five years. My staff, my post–docs, my students have immense access to a wide variety of publications with tremendous facility. Comparing that to five years ago, the time saved in technology is very, very significant".[138] Most users would agree that publishers have acted in their best interests by investing in enhanced functionality.

78. **We applaud the development by publishers of new technologies for digital journals. Innovative products such as ScienceDirect have brought increased functionality to researchers and users, making journals a more valuable research tool.**

79. The advent of the digital journal has been expensive for publishers. Not only have they had to invest in the technology to make the provision of journals in digital format possible, many publishers have also had to produce journals in both print and digital formats simultaneously. Nonetheless, as publishers move towards a digital–only model, the costs associated with electronic publication should reduce accordingly. They will no longer have to sustain dual publishing formats. Whilst there will always be costs associated with maintaining and updating digital publishing technologies, it is generally accepted that digital publication is cheaper than print production overall. As the Chartered Institute of Library and Information Professionals (CILIP) told us, "to the publisher the cost of providing electronic access to all titles is virtually zero".[139] The market report by Credit Suisse First Boston concluded that "in the longer term, we anticipate that costs savings accruing from digital–only distribution (we estimate that printing and distribution costs are 15% of total costs), partly offset by increased technology expenses, should also provide some support to margins".[140] In addition, technological developments bring increased revenue for publishers. The UK's National Electronic Library for Health told us that publishers "are creating 'value–added products' whose main aim is not primarily to meet the needs of librarians and users but to inter–link their own products".[141] Whilst we cannot agree that interlinkage is the only incentive for publishers to develop new products, it certainly does yield this benefit, making visible sections of a publisher's content that would otherwise have had a very low profile. Technology improves functionality for users of STM journals but it also reinforces a publisher's profitability. **We are persuaded that the costs to publishers associated with digitisation will reduce over time. Consequently, we would no longer expect these costs to be used as a justification for steep increases in prices. In the meantime we are concerned that financially powerful STM publishers may be using their strength during this digital transition period to make excessive profits whilst the going is good.** Competition issues are addressed in paragraphs 90 to 94.

80. It is worth noting that some costs associated with the digitisation of journals should not be included within the price of a particular journal. In answers to supplementary questions,

138 Q 276

139 Ev 411

140 CSFB, p 5

141 Ev 351

ALPSP made a clear distinction between the publication costs of digital journals, included in the subscription price, and the costs of retrodigitisation, the digitisation of the back catalogue: "those publishers which have articulated comprehensive retrodigitalisation plans have treated these direct costs as quite separate from ongoing publishing, and indeed have priced the resulting back volume collections quite separately from ongoing subscriptions".[142] **We believe that publishers should make it clear to subscribers what services and costs are and are not covered by the overall subscription price, enabling libraries and other users to weigh up the costs and benefits of taking out the subscription. We urge the Joint Information Systems Committee and other buying bodies to press for greater transparency in this area.**

81. The argument that increased journal prices are caused by rising publisher costs is undermined by variations in price growth rates across the sector. Several memoranda highlighted the difference in price between commercial and society journals. Professor Robert Cahn told us that, in his experience, "this price explosion is considerably greater for journals published by the big international commercial publishers than it is for journals published by professional societies".[143] In oral evidence Dr Julia King of IoPP told us that "we are not Elsevier and we are not as pushy, we do not hike our prices up as much".[144] Sally Morris of ALPSP added that "there have been quite a lot of published studies comparing the prices of commercial and non–commercial publishers in different subject areas and they all seem to show that on average non–commercial publishers have lower prices".[145]

82. On 1 March 2004 we heard oral evidence from a group of commercial publishers that the price differential could be explained by a difference in costs. Dr John Jarvis of Wiley told us that society publishers do not have to "build the kind of infrastructure which commercial publishers have had to build. It has been the commercial publishers over the past five years who have been very delighted and excited to do it". He also referred to the "enormous costs that many commercial publishers have put into transitioning a business from 1997, a total print business through the mail to a highly efficient digital business".[146] The idea that commercial publishers bear the burden of technological advances in publishing was disputed by Dr King of IoPP:

> "Some of the things the learned society publishers and smaller publishers have done have driven the larger publishers to move forward faster in the electronic medium. The Institute of Physics was the first publisher to get all of its journals available on line long before some of the larger commercial publishers did. Sometimes you see the smaller, more agile publishers driving innovation, even though they may not have the same sorts of funds to spend as some of our larger colleagues."[147]

142 Ev 447

143 Ev 80

144 Q 96

145 Q 99

146 Q 31

147 Q 129

Commercial publishers tend to have larger profit margins than society publishers. It is reasonable to assume that higher levels of investment in technology and innovation can be expected from publishers making high profits and having substantial cash reserves. Nonetheless we do not accept the argument that learned societies have been slow to invest in this area and are not convinced that investment in new technologies on its own explains the significant price differential.

83. In its 2002 report, *The market for scientific, technical and medical journals*, The Office of Fair Trading (OFT) reported that it was "not persuaded by this cost justification argument".[148] It is difficult to assess how a publisher's costs relate to the prices that they charge because of variations in costs between journals and variations in methods of reporting costs between publishers. Nonetheless, the significantly lower prices charged by society publishers for their journals suggest that publishing costs are being overplayed by some commercial publishers. Commercial publishers enjoy significant profit margins of up to 34%. This would appear to belie the argument that the main driver of price increases is cost. **Like the Office of Fair Trading, we are not entirely convinced by the cost–justification argument employed by publishers to explain rising prices. Publishers undoubtedly add value to the scientific process, but they also profit from it.**

VAT

84. When the UK introduced VAT in 1973, it signed up to the general agreements that covered the application of VAT throughout the Common Market. Under these and successive agreements the UK has been able to maintain zero–rate VAT reliefs for certain specified goods, including printed publications, which were also exempt from the purchase tax that preceded VAT. Digital publications, however, still incur the full rate of 17.5% VAT.

85. The differential treatment of print and digital publications for tax purposes was widely criticised in the evidence we received. The University of Hertfordshire noted that "the significant cost difference for the same content in a different format is anomalous and a disincentive to widespread availability of scholarly information to UK higher education".[149] Libraries and publishers alike complained that the VAT charged on digital publications was hampering any move towards a digital–only environment. The Scottish Confederation of University and Research Libraries (SCURL) argued that, from a library perspective, "the application of VAT to electronic publications has added an additional burden and is a disincentive to move to electronic only access".[150] Blackwell Publishing agreed: "library overheads could be greatly reduced by complete migration to online–only journals, but there is currently no financial incentive as libraries have to pay full VAT on online subscriptions".[151] We heard in oral evidence that VAT amounted to 5% of the University of Hertfordshire's total information provision budget.[152] Some publishers offer discounts on their digital publications in order to compensate for the VAT charged on them. Although

148 OFT, p 10

149 Ev 314

150 Ev 325

151 Ev 306

152 Q 242

this measure reduces the impact of the problem for libraries, it does make it difficult for publishers with a large digital output to compete on equal terms. ALPSP noted that VAT was helping to maintain high publishing costs: "the cost savings (up to 20–25%) which might be realised by the abandonment of print would be welcomed by publishers, but the current VAT situation means that most of the saving is negated".[153]

86. Many witnesses called for Government action on the issue of VAT. RCUK stated that "the Government should consider rectifying this anomaly if it wishes to create a level playing field in the publications market.".[154] Aslib argued that "the UK should lobby the EU for parity on the VAT applicable to paper and electronic formats".[155] Another suggestion, made by the Publishers Association, was that "the Government should consider allowing relief to be attached to the UK based institutional recipients of essential scientific information to be used for educational purposes, if not to the content itself".[156] Given the unanimity of these calls, made by parties that found it difficult to agree on most of the other issues raised by this inquiry, we were surprised by the Government's lacklustre approach to the issue. All that the three departments involved in compiling the Government evidence, DTI, DfES and DCMS, could muster in response to the problem was a bald statement that "VAT liability for electronic works but not for printed works is an issue that has been raised by all sides".[157] In oral evidence, however, we learnt that DTI had made representations to HM Customs and Excise on the issue.[158] **It is not enough for the Government departments involved to declare themselves to be aware of the problems surrounding the imposition of VAT on digital, but not print, publications. As the issue is so critical to the adequate provision of scientific publications and to reaping the full anticipated benefits from digitisation, we recommend that DTI, DfES and DCMS all make a strong case to HM Customs and Excise for a change to the existing VAT regime.**

87. We asked HM Customs and Excise for a note explaining why print and digital publications were subject to different VAT regimes and what measures, if any, it intended to take to alter the situation. In response it cited two reasons why the VAT regime could not be changed. Firstly, whilst the terms of the existing agreements "allow the UK to retain one of the most wide–ranging and generous packages of zero rate VAT reliefs anywhere in the EU, they also prevent us from introducing any new ones".[159] We do not understand why the terms of existing agreements should "prevent" the introduction of new VAT reliefs. The EU is constantly adapting its regulations to meet the changing needs of its members. The UK Government has lobbied the EU for change on many occasions, and it strikes us as odd that it should neglect to do so now on an issue that is so important for the effective functioning of the UK research community.

153 Ev 92

154 Ev 294

155 Ev 328

156 Ev 102

157 Ev 381

158 Q 352

159 Ev 426

88. The note from HM Customs and Excise also states that the technical differences between print and digital publications preclude their being included in the same category for tax purposes:

> "CD–ROMs and internet–based material often include search facilities, audio and video recordings, internet links and games or other interactive content, which are neither characteristic of, nor possible for a printed paper product. These differences not only mean that it would be impossible to bring digital publications within the existing zero rate for printed publications, but also make it reasonable to consider digital and printed publications separately, and on their own merits, when determining tax treatment."[160]

Whilst we accept that the format of print and digital publications is different, we fail to see why this should be a barrier to subjecting digital publications to the same zero rate VAT relief as print publications. As HM Customs and Excise states in its note, the zero rate of VAT currently applies to a range of goods and services, including food, children's clothes and public transport fares, all of which have distinct characteristics: their dissimilarity to each other has not been an obstacle to their similar treatment for tax purposes. Furthermore, a consideration of digital publications "on their own merits" need not prevent them from being granted VAT relief. **We recommend that HM Customs and Excise make strong and immediate representations within the European Commission to bring about the introduction of a zero rate VAT relief for digital journals, in line with the zero rate currently charged on print journals.**

89. We understand that the solution we have proposed will take time to implement. Given the urgency of the problem, a quicker remedy is clearly required in the immediate term. In oral evidence, Frederick Friend of JISC suggested that HM Customs and Excise should "allow libraries exemption. […] Already there is a precedent for medical equipment which universities can identify themselves and then be given exemption from VAT. […] it would not contravene European regulations, if that exemption were extended to electronic information".161 Given that such an exemption would benefit both libraries and publishers and would not contravene existing EU regulations, we see no obstacle to its implementation. Other countries have already taken steps in this direction: in Sweden, for example, Government and municipal educational, health and other institutions which do not themselves charge VAT pay the VAT on scientific publications but subsequently have it repaid in full by the State.[162] **We recommend that HM Customs and Excise exempt libraries from the VAT currently payable on digital publications whilst it negotiates for a more permanent solution within the EU.**

Competition issues

90. Much of the written evidence to this inquiry raised concerns about the competitiveness of the market for scientific publications. The Authors Licensing and Collecting Society (ALCS), for example, told us that "the current dominance of the scientific journals market

160 Ev 426-7

161 Q 242

162 http://www.rsv.se/broschyrer/552b/index.html

by an increasingly small and monopolistic group of global conglomerates (Reed Elsevier et al) has a significant effect on individuals, on research, and on users".[163] Consistently high profit margins would suggest that competition within the market is poor. The majority of such concerns related to Reed Elsevier, which, according to Electronic Publishing Services Limited, currently has a 25.8% share of the total STM information provision market.[164]

91. In 2001, the proposed acquisition of Harcourt General Inc by Reed Elsevier plc was referred to the Competition Commission under the merger provisions of the Fair Trading Act 1973. The Competition Commission concluded in its report by a majority of two to one that the merger was unlikely to operate against the public interest and the merger proceeded as planned. The dissenting member of the Commission, Mr J.D.S. Stark, set out his reasons for diverging from the consensus in a supplementary note to the report. He concluded that the merger would result in:

a) "Higher prices for access to STM journals in electronic or print form than would otherwise have been the case; and

b) More restrictions on the development of other mechanisms to facilitate access to STM journals via other, non–Elsevier, portals than would otherwise have been the case".[165]

The report also stated that "the inquiry has brought to light a number of features of the market for STM journals that are unusual and may benefit from further examination".[166] Accordingly, the Office of Fair Trading (OFT) announced an informal consultation on the market for STM journals, and published a report in September 2002. The report concluded that no further action should be taken at present; that further action may be needed in future "if competition fails to improve, or should additional significant information come to light"; and that action might best be taken at an international level.[167]

92. Several witnesses were strongly opposed to the view that the market is not competitive and thought that Government should not intervene under any circumstances. The Royal Society of Chemistry told us that "publishers should continue to innovate with their products and services, should compete to publish the best work, and should charge prices which are regulated by the market not by Government".[168] Reed Elsevier is itself a fierce advocate of regulation by market forces. In written evidence, it stated that "the government should continue to allow market dynamics to ensure that publishers continue to meet the needs of scientific research communities effectively and efficiently".[169] In oral evidence Sir Crispin Davis, the Chief Executive Officer, told us that his company had not taken advantage of its market position to raise prices: "I think […] we have been a moderating influence on pricing in this industry over the last five years".[170] We note that Reed Elsevier

163 Ev 458

164 EPS Market Monitor, Scientific, Technical & Medical (STM) Information: Market Trends and Industry Performance, Issue 3, vol 1, June 2004

165 Competition Commission, Reed Elsevier plc and Harcourt General, Inc: A report on the proposed merger (Cm 5186), July 2001, p 26

166 Competition Commission, p 4

167 OFT, p 21

168 Ev 208

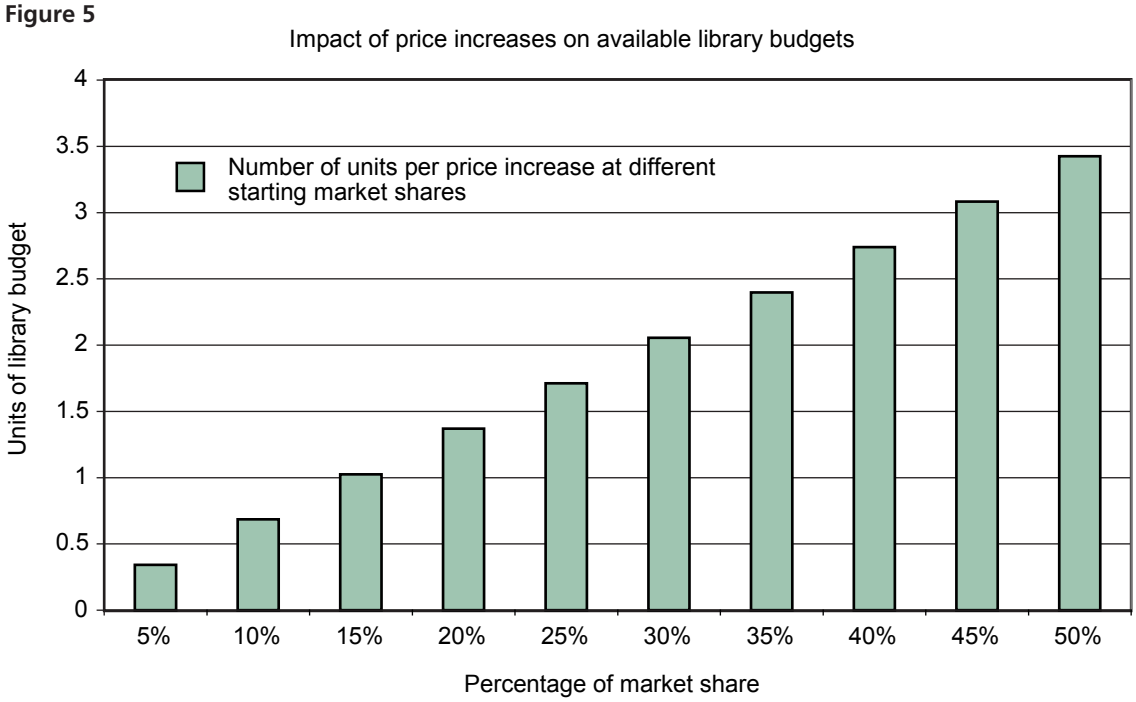
169 Ev 197

170 Q 73

have moderated their price rises and kept percentage increases in single digits, although we do have some reservations about the way in which prices are reported, as is detailed earlier in this chapter. Nonetheless, we agree with the findings of both the Competition Commission and OFT that there are certain characteristics of the STM journals market that make a conventional assessment of how well it is functioning difficult. The Wellcome Trust explains that "this market does not behave conventionally. It is not well positioned to deliver the benefits of unfettered free markets and if left as it is could produce outcomes which are in the interests of very few".[171] The peculiarities of the market become crucial to an understanding of how well it is functioning.

93. Neither journal prices nor a breakdown of publishing houses by market share is sufficient by itself to understand the concerns raised by the reports of both the Competition Commission and OFT. It is the interrelation of these two factors that gives most cause for concern. The Competition Commission report commented that price competition does not occur in the STM journal market: "if a very well–regarded but expensive journal increases its price further, it is the cheaper, but less–well regarded journals in the same field that are cancelled, so that the subscription to the leading journal can be maintained. This means that a publisher sometimes has the potential to increase his market share by raising his prices".[172] This feature of the market is well illustrated by a graph based on an analysis by Credit Suisse First Boston. See figure 5, below:

Figure 5



Credit Suisse First Boston, Scientific, Technical and Medical Publishing, p26

Reed Elsevier typically accounts for 30–50% of library acquisitions budgets.[173] If a library has a nominal budget of 100 units, a 3% increase in budget would give it 3 additional units to spend. Figure 5 shows how many of those extra units Reed Elsevier would take if it

171 Wellcome Trust, Costs and business models in scientific research publishing, p 9

172 Competition Commission, p 15

173 CSFB, p 25

increased its prices by a rate of 6.85% from a number of starting positions, expressed as percentages of the total library budget.[174] At a 30% share of the library's budget, Reed Elsevier would take just over 2 of the units. At a 50% share, it would take 3.4 units, 0.4 units more than the library's budget increase allowed. Thus, **because library budgets generally have a fixed ceiling, by increasing prices, the publisher with the largest share of the budget can gain an even greater share and may also force other publishers out of the budget altogether.**

94. Currently, the potential for large publishers to increase their share of library budgets, combined with a lack of library purchasing power (see chapter 5), a lack of substitutability and the reluctance of academics to engage with the issue, ensure that theoretically there is nothing to prevent Reed Elsevier and other large publishing companies from raising their prices still higher. Even where such publishers impose only minimal price increases, the negative impact upon the library budget is substantial. These factors have led us to agree with OFT "that there is evidence that the market for STM journals may not be working well".[175] Whilst there is no new evidence relating to competition to report, OFT did make provision to re–examine the situation "if competition fails to improve".[176] It is certainly the case that the industry is in flux. Reed Elsevier and other publishers are facing increased competition from other information service providers. In April 2004 Google, for example, announced a deal with MIT and 16 other universities worldwide to provide keyword searching across the scholarly content held within the repositories at these institutions.[177] The intervention of large companies offering navigational tools is a potential threat to publishing companies such as Reed Elsevier that offer similar services. It remains to be seen how these developments will affect the market but it is important not to exaggerate the threat that digitisation poses to the leading STM publishers against the opportunities it offers to cement market leadership. It is, for example, the case that the digital revolution is a factor in causing smaller publishers to sell out, further increasing concentration in the industry. We find it hard to disagree with Mr Stark's minority opinion, published as part of the recent Competition Commission report into the merger of Reed Elsevier and Harcourt General, about the potentially damaging impact of such mergers on pricing. **We recommend that the Government Response to this Report provides information on the measures being taken by the Office of Fair Trading to monitor the market for STM journals. We urge the Office of Fair Trading to commit to biennial public reporting on the state of the market, including how STM publication prices are developing; how prices change following mergers and acquisitions in the sector and the impact of bundling deals upon competition.**

174 Q 64. Crispin Davis told us that Reed Elsevier had increased its prices by between 6.2—7.5% per year over the last five years. Figure 5 thus assumes an average yearly price increase of 6.85%.

175 OFT, p 21

176 As above

177 EPS Market Insight, "Google and OAI: New Effort to Search Across University Repositories", April 2004

5 Intelligent procurement

Library funding

95. Restrictions on academic library funding have greatly exacerbated problems with the provision of scientific publications. Library funding has declined as a proportion of total university budgets. John Cox, an independent publishing consultant, told us that, in the 1970s, library expenditure accounted for 4% of total university spend compared to 3% currently. These figures are in stark contrast to the 3% year on year increase in the output of scientific articles.[178] More recently, "the libraries' share of total UK university funding […] declined from 3.1% in 1998–99 to 2.8% in 2001–02 in the old [pre–1992] universities, and from 3.8% to 3.6% in the new [post–1992] universities".[179] Not only has library funding declined as a proportion of overall institutional spend, it has not kept pace with either research output or journal prices. The Chartered Institute of Library and Information Professionals (CILIP) told us that, whilst between 1996–07 and 2000–01 the average journal price increased by 41%, over the same period the information resource budget of UK university libraries decreased by 29% in real terms.[180] Journal prices are increasing by rates of up to 10.6% per year.[181] The downward trend in academic library funding, both in real terms and within institutions, is of serious concern.

96. The mechanisms used to allocate library funding make it difficult to verify the accuracy of these statistics. Higher education institutions receive funds from a range of sources, both public and private. For many of these institutions, the block grant from HEFCE, provided under the terms of the Dual Support System, is a significant element, but the proportions vary within the broad range of 10–60%. Libraries are funded from the university's general funds, of which HEFCE's contribution from the block grant is one element. HEFCE does not ring fence funds for library provision. The Follett Report published in 1993 noted that "the principle which therefore underlies the allocation of almost all funding related to the provision of research libraries in HE [higher education] is that it is for the individual institutions to decide how to allocate resources to meet these needs, from within the general funds available to them". The report concluded that this flexibility was necessary because it enabled institutions "to distribute funding internally as they think best and helps to ensure responsiveness to local needs".[182] Whilst we are concerned that the library's share of the overall university budget is in decline, we recognise that UK higher education institutions are currently under severe financial pressure on all sides. The decline in library funding may well reflect added financial pressures elsewhere in the university's budget. Universities need to have the freedom to prioritise to meet the various demands placed upon them. **We agree that universities should be able to allocate their budgets locally in response to the needs of their teaching and research communities.**

178 Ev 134

179 Ev 100-101

180 Ev 411

181 The Library & Information Statistics Unit (LISU), Loughborough University, "Library & Information Statistics Tables", 2003

182 The Follett Report, paras 216-17

97. We asked HEFCE what proportion of the block grant was spent on library provision. Rama Thirunamachandran told us that "ultimately HEFCE funds are less than half of what the totality of the university sector's general income is; so it is difficult to specify exactly how much of HEFCE's money might be going to libraries, but UK university libraries spend about £400 million".[183] We found this vagueness difficult to accept. HEFCE is the public body responsible for distributing funds to higher and further education institutions in support of research and teaching needs. In order to be able to allocate its funds, HEFCE has to be aware of the nature and extent of these needs, as well as the extent to which they are currently being met. The library is an invaluable component of an institution's teaching and research provision: the cost of the services that it provides form part of the full economic costs of research. At the very least, HEFCE should make itself aware of the financial pressures facing academic libraries when it calculates the funding to be allocated through the block grant. It cannot do this unless it takes an active interest in library budgets. HEFCE funds a recently–formed think tank, the Higher Education Policy Institute (HEPI). HEPI states that one of its roles is "to inform policy makers (notably civil servants and politicians, journalists and academic decision makers) and the wider public about the issues, relevant experience and research".[184] We believe that HEPI would be well placed to conduct research into current library funding and future funding needs. **It is unacceptable that HEFCE has shown so little interest in library budgets. We recommend that it commission a study from HEPI to ascertain both current library funding levels and library funding needs. The results of this study could be used to inform the allocation of the block grant.**

98. Although it would not be appropriate for HEFCE to ring fence funding within the block grant, it does have a role in offering guidance to universities about how the money might be spent. In the revised version of its Strategic Plan, HEFCE states that "to ensure that our funding is put to good use, we will identify opportunities arising from the funding relationship to offer advice and guidance to the sector, often through the sharing of good practice from within the sector itself".[185] The severe pressures faced by academic libraries present an opportunity for HEFCE to put this into practice. **HEFCE has a valuable role to play in advising universities on library funding requirements. We recommend that HEFCE establish a code of good practice for library funding that universities can draw upon when allocating their budgets.**

99. Periodicals account for 25% of the average library acquisitions budget, or a total of 10% of the average total academic library budget. Increases in research output and journal prices put pressure on the area of the budget dedicated to STM serials. All of the libraries who submitted evidence told us that they had to reduce the number of journal subscriptions they took each year. The British Library told us that, of their subscriptions, "some 7,000 [STM journal] titles were cancelled in 1998/99 and 1,300 humanities and social science titles were cancelled in 1996–98.[186] The British Library receives free copies of all UK–based journals under legal deposit legislation, thus these figures relate to subscriptions to journals published abroad. Other areas of the acquisitions budget are also

183 Q 337

184 www.hepi.ac.uk

185 Higher Education Funding Council for England, *Strategic Plan, 2003-08*, revised 2004 edition, p 7

186 Ev 355

under pressure: spending on books in particular is down. Table 2 below illustrates this trend:

Table 2

(£ sterling)	Information provision 2000–2001			Information provision 2001–2002		
	Universities		HE colleges	Universities		HE Colleges
	Old	New		Old	New	
Periodicals spend per user*	51.58	26.60	19.63	52.98	28.41	20.65
Average cost of periodicals	127.42	79.68	77.55	111.10°	77.04	67.22
Book spend per user*	26.79	23.23	21.87	25.03	22.10	23.96
Average cost of books	19.74	17.21	13.32	15.65°	17.17	14.23

*User = students, academic staff and external users. °Copyright deposit items free.
Loughborough University, the Library Information and Statistics Unit (LISU), www.lboro.ac.uk

From 2000—01 to 2001—02, the periodicals spend per user *increased* by 3% in pre–1992 universities, 7% in post–1992 universities and 5% in higher education colleges – an average increase of 5%. By contrast, book spend per user over the same period *decreased* by 7% in pre–1992 universities and 5% in post–1992 universities, although it increased by 10% in higher education colleges. The average decrease in book spend in universities was 6%. The average cost of both books and periodicals was down, although, for periodicals this may reflect an increase in bundled deals: see paragraphs 56—68 for an explanation of bundle pricing policy. **Pressure on library journal acquisitions budgets has resulted in cancelled subscriptions and has contributed to a decline in book purchasing. This compromises the library's ability to provide the full range of services required by its user community.**

100. Some of the evidence we received argued that the pressure on library budgets could be reduced through efficiency savings. Bob Campbell of Blackwell Publishing told us that "most of the cost in the information system is directly related to the library and its overheads – about two thirds – while expenditure on publications is at most one third".[187] This figure is borne out by evidence from Cambridge University Library, for whom 60% of the library budget is spent on non–acquisitions related goods and services.[188] However, some of the evidence we received questioned whether these proportions represent system inefficiencies. Aslib told us that the exponential growth in information to be processed and managed required an increasing number of staff with specialist information management skills.[189] Similarly, Cambridge University Library told us that, "whilst the provision of materials for readers' use is the single most important role of a university library, the library also provides many other services that cannot simply be described as overheads". This added value includes:

- "the work essential to selecting, acquiring, cataloguing, negotiating licences and making available to readers the books, journals and electronic resources they need

187 Ev 306

188 Ev 461

189 Ev 330

- assistance to users of the collections, in the form of direct help across the desk, web–based support, e–mail help–desks, and training sessions for users at all levels from undergraduate to research professor
- the provision of borrowing, photocopying and other imaging services, document delivery between libraries, etc
- management of the collections – the provision of adequate storage facilities, preservation and repair; and growing use of digital storage; without these the materials will not be available for future generations".[190]

Accordingly, 52% of Cambridge University Library's budget is spent on staff.

101. It is commonly asserted that, by switching to a digital–only environment, libraries could make significant efficiency gains. As is explained in paragraphs 84—89 above, however, libraries are unlikely to make this transition whilst VAT is charged on digital publications. Digitisation also incurs some added costs for the library. Digital archiving, discussed at greater length in chapter 8, is time–consuming and expensive. In addition, the advent of digital licences has greatly complicated the originally very simple subscription model. The Research Council Libraries & Information Consortium (RESCOLINC) told us that "the variety of pricing models that exist within the market makes it very time–consuming for library staff to investigate all of the options and to manage the access agreements arising out of any deals".[191] The University of Hertfordshire has seen an overall increase in its information provision budget, but has had to make staff cuts in order to finance re–structuring designed to increase the emphasis on digital materials.[192] It is unreasonable to expect libraries to deliver improved services with less resources. **There is undoubtedly some scope for libraries to make efficiency savings, as there is for most organisations. Nonetheless, the valuable services provided by the library are expensive and staff–intensive. It is unlikely that libraries will have more to spend on acquisitions until they see an increase in budgets.**

Purchasing power

Libraries

102. The Joint Information Systems Committee (JISC) has undertaken a national initiative for the licensing of electronic journals on behalf of the higher and further education and research communities: the second National Electronic Site Licence Initiative (NESLi2). The initiative will run from 2003—06. It follows the three year Pilot Site Licence Initiative (1995—1997) and the original NESLi deal (1998—2001). The key features of NESLi2 are as follows:

- use of the Model NESLi2 licence for journals;

190 Ev 461

191 Ev 334

192 Ev 476

- a clearly defined list of publishers to seek agreements with, based on feedback from the community;
- an independent and experienced negotiation agent;
- pre–defined criteria to assist the negotiation process; and
- flexible order channels and access routes.[193]

103. The purpose of NESLi2 is to "increase access and to get better value for money" in the procurement of digital journals.[194] In oral evidence, Frederick Friend, from JISC, told us that the initiative had "increased access to a limited extent, but it is quite labour–intensive in terms of negotiation, both national negotiations and at local level as well".[195] This was a matter of some concern for us. Considerable time and resources are invested in negotiations for the national licensing deal. The allocation of these resources would be called into question if it could not be proved that NESLi2 was providing value for money for academic libraries in the UK.

104. The limited success of NESLi2 seems to be due, in part, to the attitude adopted by some of the libraries. Di Martin from the University of Hertfordshire told us that "from our perspective, certainly where a publisher has adopted the model licence terms that have been agreed nationally, it has made it much easier to manage and deliver those journals to our staff and students".[196] Nonetheless she stated that "the deal that has been put forward now for higher education, if we were to move to that, would give us much fewer options and we would have to take a set package".[197] National licence deals are negotiated in an attempt to secure the maximum benefits for the greatest number of libraries. As Frederick Friend reported, they involve intense negotiation at a local, as well as a national, level. They work by attracting a critical mass of library support, which, in combination, gives the negotiator greater leverage with the publisher. The Follett Report observed that, "although when compared with the US market UK purchasing power is small, within this country higher education institutions have a potentially powerful role as buyers, and there is arguably significant scope for negotiated price discounts".[198] Each library that opts out of the deal significantly reduces that scope. **Whilst we accept that it is important that libraries are responsive to local needs, opting out of national licensing deals negotiated with those needs in mind only makes the situation faced by libraries worse.**

105. The success of national licensing deals has also been hampered by the fragmented way in which they are negotiated. Procurement for Libraries, an umbrella group representing the seven higher education regional purchasing consortia for libraries, the Research Council Libraries' Consortium and the British Library, told us that "NESLi2, JISC Collections and Eduserv Chest seem to negotiate agreements for the same type of content. Arrangements made previously under NESLI have cut across agreements negotiated by the

193 www.nesli2.ac.uk

194 Q 240. Frederick Friend.

195 Q 241

196 Q 232

197 Q 222

198 The Follett Report, para 129

regional consortia and have cost libraries money in terms of forfeited discounts".[199] National licensing deals have the potential to deliver significantly more value for money and have the advantage of combining the purchasing power of all UK academic libraries. Nonetheless, they seem to have been implemented in a haphazard way. Since it would appear that all the libraries, regional consortia and national bodies are striving towards the same goal, it would make sense for them to agree a common strategy. **We recommend that the Joint Information Systems Committee negotiate with libraries, regional purchasing consortia and other national bodies responsible for procurement to agree a common strategy. Only by combining their resources will they be able to negotiate a licensing deal that secures national support and brings real benefits.**

The role of the academic

106. Problems with procurement cannot be wholly attributed to libraries and the organisations that negotiate on their behalf. It is one of the peculiarities of the market outlined in paragraph 11 that "researchers are cushioned from the real cost of publication".[200] The Council of Australian University Libraries (CAUL) told us that "academic staff are generally not responsible for expenditures: finding funds to pay for journal subscriptions is the 'library's problem'".[201] The evidence we received suggested that the reverse was true. Frederick Friend told us that "ultimately we are in the hands of our academic community, and if the academic community do not back the library up in saying 'no', then the library alone could not take action".[202] This message was reinforced throughout the evidence we received. The Open University, for example, argued that "the locus of power lies with the senior academics who control the publication of the journals".[203] This is because, as end users, academics constitute the audience that publishers are keen to please.

107. Some of the academics we spoke to held themselves aloof from the problems being explored by this inquiry. This position was typified by Save British Science, a pressure group with the aim of promoting science within the UK, which stated:

> "The market in scientific publication should not […] be looked at in terms of what is cheapest for researchers or what makes most money for publishers, but at what gives the widest range of researchers access to the widest range of scientific ideas, coupled with appropriate information about the degree to which those ideas have been tested. […] Whether or not individual libraries are hampered by 'big deals' and whether or not publishing companies are making big profits are not therefore the most appropriate questions."[204]

This is a surprising position. Research does not take place in a vacuum: it is reliant on funding mechanisms for its survival. Meeting the needs of researchers costs money, and

199 Ev 154

200 Public Library of Science, Ev 273

201 Ev 362

202 Q 224

203 Ev 323

204 Ev 373

the more value for money that can be achieved, the more effectively those needs can be met. By refusing to engage with the issues, academics are curbing the ability of libraries to negotiate satisfactory deals with publishers. Publishers will not be persuaded to change their pricing policies if the end users profess themselves to be satisfied with the status quo. We suspect that the indifference of many academics to the difficulties faced by the libraries is exacerbating the serials crisis. **It is disappointing that many academics are content to ignore the significant difficulties faced by libraries. Until they start to see the provision of journals as, in part, their problem, the situation will not improve.**

6 Self–archiving: Institutional repositories

What is a repository?

108. Self–archiving serves two main purposes: it allows authors to disseminate their research articles for free over the internet, and it helps to ensure the preservation of those articles in a rapidly evolving electronic environment. It is one of the two pillars of the Open Access movement, as they were outlined in a memorandum from Professor Stevan Harnad of Southampton University:

- Authors publish articles in open–access journals; and
- Authors self–archive articles publicly on their own or their university's website.[205]

For self–archiving to be fully effective at disseminating and preserving research articles, they need to be accessible from a single search point. This role can be fulfilled by institutional repositories — online archives set up and managed by research institutions to house articles published by authors at those institutions. Academics would deposit a copy of each of their research articles in the repository, usually after, but sometimes prior to, publication. The articles would become freely available on the internet. Articles that had been peer reviewed and accepted for publication would be distinguished by the quality hallmark of the journal in which they were published.

The current situation

109. JISC and the Consortium of University Research Libraries (CURL) jointly fund the Securing a Hybrid Environment for Research Preservation and Access (SHERPA) project, a development project that is investigating the future of research communication and publication. SHERPA is initiating the development of openly accessible institutional repositories. A recent informal survey of the members of SCONUL showed that 17 of the 51 respondents had already established institutional repositories, with a further 13 expecting to do so in the forseeable future, making an estimated total institutional participation rate of 59%.[206] In answers to supplementary questions, JISC told us that 20 institutions were currently participating in the SHERPA project. The collective experience of these institutions would be made available to all higher and further education institutions through "presentations and reports and materials such as copyright advice to be made available on the project web–site".[207] JISC also funds the Focus on Access to Institutional Resources (FAIR) programme, which has been developed to create the mechanisms and supporting services to allow the archiving process to prosper and to facilitate the building of online "places" for the deposit of material.[208] In the US, the Digital Library Research Group at Cornell University and the Corporation for National Research Initiatives (CNRI) have conducted research into the design and development of

205 Ev 440

206 Ev 478

207 Ev 463

208 www.jisc.ac.uk

infrastructures for digital repositories. The purpose of the research was to achieve the interoperability and extensibility of digital library systems.

110. When we began this inquiry, 83% of publishers allowed authors to self–archive after publication. The number of publishers willing to accept articles after they had already been archived was substantially lower. *Nature* was praised in written evidence for allowing authors to post articles published in the journal on institutional repositories in the PDF format used by publishers.[209] This journal was perceived to be an exception. The situation has, however, changed substantially during the course of our inquiry. On 3 June 2004 Reed Elsevier announced that authors published in their journals would now be allowed to post the final text of their articles on a personal or institutional website without seeking specific prior permission from the publisher. This change in policy has a number of conditions attached to it: authors must provide a link to the publisher's website; they must not use their posting for commercial purposes; they must not put their articles in central academic databases; and, "to preserve the integrity of the official record of publication, the final published version as it appears in the journal (PDF and HTML) will continue to be available only on an Elsevier site".[210]

111. Elsevier's shift in policy has been welcomed by many, notably by Professor Stevan Harnad, one of the most vocal advocates of the principles of Open Access.[211] Nonetheless, author-pays publishers have denounced the action taken by Elsevier as a "cynical piece of public relations": the Committee itself found that the timing of the announcement, approximately one month before the publication of this Report, was unlikely to be coincidental.[212] Several serious limitations to Elsevier's new policy on self–archiving have also been identified. The policy allows the publication of a text–only version of the research article. However, research articles now contain many features as well as text, including diagrams, photographs, video clips, links to research data and to cited works. Many readers will still need to access the publisher's version of the article, in PDF or HTML, that is posted on the publisher's own site, in order to take advantage of these enhanced features and tools. For this they, or their library, will still have to pay. In addition, Elsevier's ban on authors posting articles on "central databases" reduces the potential visibility of the self–archived article. As Deborah Cockerill of BioMed Central stated, "this kind of archiving is in many ways useless to the majority of scientists, mainly because no one will know that the copies exist at all or where to find them".[213] The extent of the limitations to the new policy is confirmed by Elsevier's own conviction that the change will not have an impact on the company's revenues.[214]

112. **Elsevier is no sudden convert to Open Access. The company has seen the direction of trends in publishing and has acted accordingly to minimise criticism of its current policies. We are in little doubt that Elsevier timed the announcement of its new policy**

209 The Council for the Central Laboratory of the Research Councils, Ev 299

210 Elsevier, press release, 3 June, 2004, www.elsevier.com

211 "I, for one, am prepared to stoutly defend Elsevier on all these counts, and to say that one could not have asked for more, and that the full benefits of open access require not one bit more – from the publisher". http://www.ecs.soton.ac.uk/~harnad

212 "Reed allows academics free web access", *The Guardian*, 3 June, 2004

213 As above

214 As above.

on self–archiving to pre–empt the publication of this Report. It is good news that our inquiry has prompted such a high profile endorsement of increased access to research papers. Nonetheless, there are a number of serious constraints to self–archiving in the model proposed by Elsevier.

Next steps

113. Institutional repositories have the potential greatly to increase the speed, reach and effectiveness of the dissemination of research findings: the Wellcome Trust notes in a Report that "the existence of a central archive could transform the market. Access to all UK publications would be possible and would act as a brake on excessive pricing".[215] They would benefit authors, readers and institutions: authors would see their articles made available to a wider audience; readers would be able to access articles free of charge over the internet; and institutions would benefit from having an online platform on which to display their funded research. The Scholarly Publishing and Academic Resources Coalition (SPARC) Europe told us that repositories would be "cumulative and perpetual, ensuring ongoing access to material within them".[216] The necessity for establishing and maintaining a secure archive for the preservation of digital material is discussed in chapter 8.

114. The publishing environment in the UK is not yet ready to deliver these benefits. Institutional repositories will only generate increased access to UK research findings if:

- all publishers allow their authors to self–archive without constraint (see paragraph 111);
- all UK research institutions establish and maintain repositories; and
- all UK academics deposit copies of their articles in their institution's repository.

Reed Elsevier's June announcement shifts some of the burden of change from publishers to research institutions and the academics that work within them.

115. Repositories have the potential to yield benefits for the institutions that house them by making their research more visible and helping them to construct a "brand" identity. Yet, when SCONUL carried out its informal survey of member organisations, it found that approximately 40% of academic institutions neither had an institutional repository nor any plans to create one. The current participants in the SHERPA project tend, for the most part, to be research intensive institutions. Nonetheless, institutions with less of a research focus also stand to benefit from the enhanced profile that repositories would bring. We were thus surprised to discover that some institutions have adopted a "wait and see" approach to repositories. The University of Hertfordshire, for example, told us that it "does not currently have an institutional e–print repository. We are aware that repositories have been set up recently by a number of universities and we are monitoring this trend. If this arrangement becomes the practice amongst our peers, then we will also set one up".[217] It is not clear why the University of Hertfordshire needs to wait until there is a critical mass of

215 The Wellcome Trust, Economic analysis of scientific research publishing, p 25

216 Ev 163

217 Ev 476

repositories before itself proceeding. Institutional repositories will only yield maximum benefits to the research community if all institutions are prepared to participate. We are concerned that insufficient incentives are in place to allow this to happen. **Institutions need an incentive to set up repositories. We recommend that the requirement for universities to disseminate their research as widely as possible be written into their charters. In addition, SHERPA should be funded by DfES to allow it to make grants available to all research institutions for the establishment and maintenance of repositories.**

116. Even those institutions that have established a repository still face the challenge of persuading academic authors to self–archive. ALPSP told us that "although more than 50% of publishers permit authors to self–archive their own articles in either preprint or publishing form, an extremely small proportion of authors are actually doing so".[218] SHERPA posited an explanation: "the main challenge at the moment is not setting up the repositories *per se* but populating them. Academics do not currently have many major incentives to archive their material (or at least they are unaware of the benefits of repositories)".[219] We found this to be true. It was clear to us that the main focus of academics was on the initial publication of their articles in a recognised journal and that subsequent self–archiving was relatively low on their list of priorities. We found it worrying that academics did not take an interest in what happens to their research after it has been published.

117. The lack of awareness about, and enthusiasm for, repositories amongst academics can largely be ascribed to the nature of their motivations for publication. The panel of academics who gave oral evidence to us on 21 April 2004 unanimously agreed that the most important consideration for them was being published in the right place. Professor Williams and Professor Fry agreed that this meant publication in high impact journals. Professor Crabbe added that the emphasis placed on impact factors by academics was a direct consequence of the measures used in the RAE (see paragraphs 208—210). Professor Hitchin told us that the journal's speciality was the determining factor in his decision on where to publish.[220] For varying reasons, all four academics emphasised the importance of publishing in certain selected journals within their field. Institutional repositories cannot currently compete with the incentives that publication in such journals provides. Academics have no financial incentives to self–archive. Neither does self–archiving bring with it the promise of prestige and enhanced reputation offered by known quality journals. The Scholarly Publishing and Academic Resources Coalition (SPARC) Europe posited that "a requirement to deposit would accelerate work already being carried out in the UK to develop additional repositories".[221] We agree. **Academic authors currently lack sufficient motivation to self–archive in institutional repositories. We recommend that the Research Councils and other Government funders mandate their funded researchers to deposit a copy of all their articles in their institution's repository within one month of publication or a reasonable period to be agreed following publication, as a condition of their research grant. An exception would need to be made for research findings that are**

218 Ev 91

219 Ev 478

220 Qq 285-6

221 Ev 166

deemed to be commercially sensitive. Self–archiving has copyright implications: see paragraphs 121—127.

118. Institutional repositories cannot alone capture all the articles generated by publicly–funded research in the UK. A number of provisions would need to be made to remedy this situation:

- Many researchers are funded by organisations other than the Research Councils, and would not therefore be covered by their mandate. Some of these organisations have shown themselves to be in favour of widening access to scientific publications. The Wellcome Trust, for example, "encourages researchers to maximize the opportunities to make their results available for free" and has announced that it will "encourage and support the formation of […] free–access repositories for research papers".[222] **We recommend that institutional repositories are able to accept charitably- and privately–funded research articles from authors within the institution, providing that the funder has given their consent for the author to self–archive in this way.**

- Many researchers, for example within the private sector, are not attached to higher education institutions and consequently may not have automatic access to an institutional repository. Whilst institutions would, in theory, be able to accept research articles produced elsewhere, in practice this seems unlikely, particularly if institutions viewed repositories as a showcase for their own work. In order to house articles in this category, a central repository would be required. The University of Hertfordshire recommends that "the British Library should have a major role in setting up and running national e–print repositories and open access archives [and] in the co–ordination of the development of any discipline-based repositories".[223] Given its existing legal deposit function, to be explored in chapter 8, we agree that the British Library would be well placed to carry out this role. We understand that it has already begun to establish a repository.[224] **We recommend that DCMS provide adequate funds for the British Library to establish and maintain a central online repository for all UK research articles that are not housed in other institutional repositories.**

- Many research findings are "negative" and consequently do not get published because they are not deemed to have made any progress. This issue is of particular concern in medical fields, where the non–publication of, for example, negative clinical trials could have an impact on public health. It is also important in other fields, however: the publication of negative research findings has the potential to save duplication of effort by other researchers. Unlike journals, institutional repositories would not be subject to the commercial imperative to publish only research that obviously advances scientific knowledge. This presents a new opportunity for the publication of negative results. **Institutional repositories should accept for archiving articles based on negative results, even when**

222 "Scientific publishing: A position statement by the Wellcome Trust in support of open access publishing", www.wellcome.ac.uk

223 Ev 316

224 Ev 478

publication of the article in a journal is unlikely. This accumulated body of material would be a useful resource for the scientific community. It could help to prevent duplication of research and, particularly in the field of clinical research, would be in the public interest. Articles containing negative findings should be stored within a dedicated section of the repository to distinguish them from other articles.

119. Whilst we commend JISC and SHERPA for the work that they have carried out to develop functional institutional repositories within the UK, we were surprised by the lacklustre approach of Government to this issue. Institutional repositories have the potential to vastly improve access to scientific publications and to increase the impact of UK research. Several witnesses saw the realisation of this potential as a role for Government. The Chartered Institute of Library and Information Professionals (CILIP), for example, argued that "Government should do whatever is in its power to persuade all UK publishers to support self–archiving and all research institutions to set up open–access archives".[225] Although the Director General of the Research Councils, Professor Sir Keith O'Nions told us that "in effect, they [repositories] are funded by use of government funds", the Government's approach to institutional repositories has been largely exploratory and lacking in any coherent strategy.[226] Sir Keith told us that "I do not think we have fully researched and understood all the implications of these changing models".[227] This lack of direction may have contributed to the reluctance of some institutions to establish repositories. The University of Hertfordshire, for example, urged " the development and implementation of a national strategy", implying a current lack of one.[228] A Government strategy is essential to driving forward the process of establishing effective institutional repositories.

120. Self–archiving is a cross–departmental issue. It is DTI's responsibility to work with publishers to encourage them to allow self–archiving. Any Research Council mandate for authors to self–archive would need to be implemented through RCUK. Through HEFCE and its derivative bodies, such as JISC and SHERPA, DfES has a role to play in persuading and assisting institutions to establish and maintain repositories and in establishing guidelines and standards. The British Library relies on grant–in–aid from DCMS. It would need additional funding to set up and manage a central UK repository to capture articles not deposited elsewhere. We have no confidence that these departments are currently working together on this issue. Their collective written evidence was remarkable for its lack of direction. In oral evidence, neither of the two Government witnesses appeared to know what was being done in other departments. **In order for institutional repositories to achieve maximum effectiveness, Government must adopt a joined–up approach. DTI, OST, DfES and DCMS should work together to create a strategy for the implementation of institutional repositories, with clearly defined aims and a realistic timetable.**

225 Ev 412

226 Q 382

227 Q 409

228 Ev 477

Copyright

121. Institutional repositories have copyright implications. A recent analysis of publisher copyright agreements with authors found that "90% of agreements asked for copyright transfer and 69% asked for it prior to refereeing the paper. 75% asked authors to warrant that their work had not been previously published although only two explicitly stated that they viewed self–archiving as prior publication. 28.5% of agreements provided authors with no usage rights over their own paper. Although 42.5% allowed self–archiving in some format, there was no consensus on the conditions under which self–archiving could take place".[229] These statistics are now out of date, particularly in the context of the recent announcement made by Reed Elsevier, but they are sufficient to show a mixed approach to copyright that is potentially confusing for authors. BioMed Central criticised the current copyright situation as "cumbersome and sub–optimal".[230] **A greater degree of consistency is desirable in copyright agreements, from publishers, but also from Government, institutions and academics, who have the power to influence the terms on which copyright agreements are established.**

122. In oral evidence, Jane Carr of the Authors Licensing and Collecting Society (ALCS) read out a typical copyright agreement, telling us that "the practice of assignment by some publishers takes away all the rights of an author, if I can quote 'Without limitation, any form of electronic exploitation, distribution or transmission, not known or invented in the future, all other intellectual property rights in such contributions…' and so on".[231] Such agreements limit the ways in which authors can use articles that they have produced, including for teaching purposes. Not all publishers are so restrictive. We heard in oral evidence that Nature Publishing Group, for example, allowed authors to license, rather than sign away, their copyright to the publisher.[232] Under the terms of a licensing agreement, authors retain ownership of the copyright on their article. The publisher is licensed to use it for the purposes of publication and re–sale. The author, on the other hand, is permitted to use the article in other ways, for example, by depositing it in an institutional repository. Some publishers have hidden disincentives for authors to enter into licensing agreements. Jane Carr quoted an ALCS member who had reported that "'the only journal I challenged over assigning copyright agreed to assign it to me as long as I understood that they would not publish me again. Academic publishing is, from an author's perspective, a complete rip–off'".[233] As has already been explained, authors rely on publication to further their career goals and are likely to be reluctant to take any action that would jeopardise their future relationship with a publisher. Acting as individuals, they thus have only limited power to influence the copyright agreement that they sign.

123. As was the case more generally, we found that many academics were disengaged from the issue of copyright assignment. A memorandum from DTI, DfES and DCMS stated that "Author's copyright is an issue that may not be fully understood by Authors, and an aura

229 Elizabeth Gadd, Charles Oppenheim and Steve Probets, "The impact of copyright ownership on academic author self-archiving", May 2003, www.lboro.ac.uk

230 Ev 173

231 Q 300

232 Q 58

233 Q 300

of misinformation often surrounds the process".[234] All of the academics we heard in oral evidence on 21 April felt that publishers played a useful role in the management of copyright.[235] Professor Williams told us that "as an editor, one of my concerns is people trying to publish it twice with slight modifications, but I have no problem with the copyright issue there and it does not impede my teaching at all".[236] In its closing statement, ALCS suggested a reason for academic lack of concern about copyright: "because scientific authors may be less concerned about personal financial return (due to research and publication being part of their salaried position or grant money) they are largely unaware of the substantial secondary rights incomes currently available".[237] As has been demonstrated above, many academics do not show much enthusiasm for self–archiving either. The assignment of all rights to publishers has little personal impact on the author. This is hampering any change to a system where authors, and the public that funds them, retain the rights to research findings, which in turn limits the accessibility of scientific publications to academics, teachers and the wider public.

124. Publishers can impose restrictions on the ways in which those articles for which they own the copyright can be used. The assignment of copyright to the publisher can thus prove to be a barrier to the effective functioning of institutional repositories, as is the case with Reed Elsevier (see paragraphs 110—112). This has led many advocates of the self–archiving system to call for it to be made mandatory for publicly–funded UK authors to retain the copyright on their articles, entering into copyright licensing agreements similar to those used by Nature Publishing Group. SHERPA argued that "since the taxpayer funds the majority of the research in UK institutions, government could kick–start open–access at the funding stage. Firstly, OST funding agencies could prevent the copyright of work they have funded being given away by researchers".[238] This message was reinforced by SPARC Europe in written evidence: "requiring that authors retain copyright will ensure that reuse of the material, within accepted scholarly and educational practices, will be safeguarded".[239] As is outlined above, individual academics lack the power to insist on their retention of copyright. Collectively, however, authors are too valuable a commodity for publishers to risk alienating them by refusing to allow them to retain copyright. Any change to the existing copyright provisions would have to be centrally instigated and supported in order for it to be successful.

125. As with many of the issues surrounding the publication of STM journal articles, any change to existing copyright provisions could be problematic if it were implemented at a national level only. If UK authors were mandated to retain the copyright on their articles, this could put them at a disadvantage internationally, as some publishers might select in their place non–UK authors who were still willing to assign all rights. If papers were selected for publication on the basis of quality alone, this ought not to occur. Given evidence of current publisher practices, however, we cannot be entirely confident that the copyright status of authors would be ignored when the publisher decided which articles to

234 Ev 384

235 Q 300

236 Q 303

237 Ev 457

238 Ev 217

239 Ev 166

accept and which to decline. Such issues present difficulties for the reform of the current system. Nonetheless they should not in themselves be allowed to prevent a move towards a more effective system of self–archiving.

126. **The issue of copyright is crucial to the success of self–archiving. We recommend that, as part of its strategy for the implementation of institutional repositories, Government ascertain what impact a UK–based policy of author copyright retention would have on UK authors. Providing that it can be established that such a policy would not have a disproportionately negative impact, Research Councils and other Government funders should mandate their funded researchers to retain the copyright on their research articles, licensing it to publishers for the purposes of publication. The Government would also need to be active in raising the issue of copyright at an international level.**

127. In managing their copyright, publishers provide authors with a service. The provision of a service was used in evidence to justify the assignment of all rights to publishers. Dr Jarvis of Wiley told us that "if your author's work is then stolen or changed, what publishers can do because of their scale and their research is to do something about that. Individual authors would find it very difficult".[240] Items of intellectual property other than copyright, such as patents, are often retained and managed by higher education institutions or their industrial partners. This suggests that institutions already have the capacity and expertise to manage intellectual property rights. Rama Thirunamachandran, from HEFCE, reported that "institutions, as part of their knowledge transfer activities, are supported to have experts who in other areas support patents and licensing arrangements and so on. Many of the larger institutions would have some in–house expertise which could be used to support authors on copyright and related licensing issues".[241] It is logical to extend the institution's intellectual property management role to incorporate copyright. **We recommend that higher education institutions are funded to enable them to assume control of copyright arising from their research. In order to carry out this function they will need in–house expertise and dedicated staff.**

Costs

128. One of the main advantages of institutional repositories is that they are relatively cheap to set up and maintain, offering a cost–effective solution to some of the problems in scientific publishing. SHERPA told us that:

> "in the short–term, the costs of setting up open–access repositories are minimal. Universities already have good IT infrastructure in place – local area networks which connect to the internet and widespread use of computer workstations. Given this provision, the connection cost and use of repositories is absorbed within existing overheads, so accessing the material is effectively free."[242]

240 Q 59

241 Q 407

242 Ev 217

We asked SHERPA to supply us with an analysis of the costs of establishing institutional repositories across the UK higher education sector, based on its experience to date. This is given in table 3 below:

Table 3

	Cost per HE institution	**Total cost (based on 131 current HE institutions in the UK)**
Installation costs		
Server	£1,500	£196,500
Software	£0	£0
Installation (5 days)	£600	£78,600
Customisation (15 days)	£1,800	£235,800
Total installation costs	**£3,900**	**£510,900**
Ongoing maintenance costs (per 3 years)		
Technical support	Absorbed by existing IT services	Absorbed by existing IT services
Supported archiving service	£90,000	£11,790,000
Upgrades/migrations	£3,900	£510,900
Digital preservation	Significant costs (applies to all digital objects)	Significant costs (applies to all digital objects)
	£93,900	**£12,300,900**

Ev 479

129. Points of note within SHERPA's cost analysis include:

a) The software for installing repositories can be freely downloaded from the internet.

b) SHERPA reported that currently the most significant cost involved in establishing repositories is "in advocacy – promoting the service and persuading academics to deposit articles in the repository".[243] It also noted that this cost would be removed if there was a mandate for authors to deposit articles in institutional repositories.

c) Several institutions have already established repositories (20 currently participate in the SHERPA project). The installation costs for them would, therefore, be nil.

243 Ev 477

d) SHERPA told us that the technical maintenance costs could be "easily absorbed into an HEI's [higher education institution's] standard web services maintenance".[244] There would, however, be some significant additional technical costs that would need to be centrally absorbed. This issue is discussed in paragraphs 136—137 below.

e) The cost of populating the repository would vary according to the model selected by the institution. The task could be carried out by authors themselves using a specially designed web interface, taking an estimated 1–2 hours of their time per year. We would not, however, recommend this model, as it would mean that deposits would receive only minimal supervision and regulation. The importance of regulation is discussed in paragraphs 132—137, below. It could be overseen at an institutional level by one member of staff at a cost of up to £30,000 per year. The final option would be for one member of staff in each department to be responsible for depositing articles. In this way the costs would effectively be absorbed by the institution.

f) The preservation of digital content represents the largest cost of an institutional repository and cannot, at this stage, be quantified. Nonetheless, this is a problem that applies to all electronic resources, not simply the repositories themselves. This will be discussed in chapter 8 of this Report.

It should be noted here that the cost of applying consistent technical standards to institutional repositories is not referred to in this analysis. As is noted in paragraphs 136—137, these standards are key to ensuring the maximum functionality of repositories. SHERPA will need to take account of these costs when it applies for funding from JISC.

130. SHERPA's analysis confirms the statement made by Procurement for Libraries that "an investment, small in relation to the annual spend by HE [higher education] on scholarly journals, would create an infrastructure of institutional repositories within HE".[245] **The cost to the taxpayer of establishing and maintaining an infrastructure of institutional repositories across UK higher education would be minimal, particularly in proportion to the current total UK higher education spend. When the cost is weighed against the benefits they would bring, institutional repositories plainly represent value for money.**

The UK in the international context

131. Articles derived from research conducted in the UK currently account for 3.3% of the world's total output.[246] UK academics read a considerably larger number of articles in their field than are accounted for by this small proportion that originate in the UK. If the UK science base is to compete internationally, its researchers need access to scientific publications on a global scale. The establishment of a network of institutional repositories within the UK will, therefore, provide researchers with free access to only a fraction of the articles that they need to read. If the UK were to stand alone on this issue, the impact of institutional repositories on the provision of scientific publications would be limited. **Having taken the step of funding and supporting institutional repositories, the UK**

244 As above.

245 Ev 151

246 Ev 194

Government would need to become an advocate for them at a global level. If all countries archived their research findings in this way, access to scientific publications would increase dramatically. We see this as a great opportunity for the UK to lead the way in broadening access to publicly–funded research findings and making available software tools and resources for accomplishing this work.

Implications

Peer review and institutional repositories

132. The importance of peer review to the scientific process is discussed in paragraphs 204—207. There is some concern that, by allowing the deposit of articles prior to publication, institutional repositories will facilitate access to a substantial volume of articles that have not been peer reviewed and validated by the scientific community. This is perceived to be a problem in particular for students, who may be accustomed to using internet search engines to find articles rather than resorting to quality–assured journals. Professor Fry told us that "you can use the internet to gain access to that literature and have a certain degree of overview but you should always read the primary literature, whether it is reviews which are refereed or if it is written papers which are refereed".[247] It is of concern that institutional repositories could facilitate access to articles that have not been peer reviewed for members of the public, who may not be able to differentiate between articles of varying quality; and interest and lobby groups, who may seek to use unvalidated material for lobbying, campaigning or political purposes without it being clear either to them or to third parties that it has not been peer reviewed. The need for the public to have access to scientific publications is discussed in paragraphs 39—44.

133. Existing projects suggest that concern about the maintenance of peer review in an open archival environment might be exaggerated. A repository in the physical sciences, arXiv, allows authors to deposit articles prior to publication. The archive is unrefereed but screened by teams of experts. Professor Hitchin of Oxford University told us that he was a regular user of arXiv: "a journal puts a quality and accuracy assessment on its contents, but in practical terms as often as not I still download from the arXiv instead of going to the library to look at the journal". For him, the main advantage of this site was its speed: "the refereeing process takes time, and science sometimes cannot wait for that". Professor Williams of the University of Liverpool disagreed: "I do not think science is moving so fast we cannot make the peer review. […] I am very much against having discussion pages on the internet to determine how good a paper is, it is not a substitute for a good quality peer review".[248] This statement goes against the insistence of the other academics that we spoke to that science is "self–policing". Professor Crabbe told us that "it only takes […] one bad paper in a journal for that journal to get a very bad reputation".[249] It is generally accepted that the scientific research process has inbuilt self–regulatory mechanisms that have been broadly successful at maintaining high standards to date. The community that reads a particular article is generally the same as the community that has produced and reviewed it. Nonetheless, as is discussed in paragraphs 39—44, a growing proportion of journal

247 Q 297

248 Q 297

249 Q 308

readings derive from the public, who are less well placed than the academic community to differentiate between articles of differing quality. There is a risk that a small proportion of the readers downloading articles from an archive would be unduly influenced by a poor quality article. There is, therefore, a need for quality indicators to be present. This is discussed below.

134. Some memoranda expressed the view that authors might abuse their ability to retain copyright by altering the scientific record after their article had been published. The Royal Society of Chemistry told us that "the control of the scientific record moves towards the authors rather than an organisation with industry–wide standards for archiving, with potential loss of version control. Once an article is published it should be out of the control of the author otherwise they can change it or remove it".[250] Similarly, Reed Elsevier noted that the signing over of copyright to the publisher "may actually be a useful system for ensuring that several different versions of a paper do not end up on the Internet".[251] We share the conviction expressed by these organisations that it is important that research articles are authenticated. Nonetheless, the existence of a number of versions of the same article is not damaging in itself providing that a system is in place to differentiate between published and prior, or subsequent versions. By providing a unique and persistent identity for each article, the Digital Object Identifier system (DOI) helps to ensure that each article can be authenticated as complete and unaltered. This system would be an important element of any project to create a network of reliable institutional repositories. Nonetheless a more immediately visible system may also be required. The University of Hertfordshire suggested the "assignment of a universally recognised quality assured 'kitemark' to denote the proven refereed e–publication".[252] The Research Councils agreed. In oral evidence Professor John Wood, Chief Executive of CCLRC, told us that "certainly there need to be kite marks of certain types in order to allow people to assess what the quality of that output would be, whether it is a journal or just an e–form in some form, it needs to have a quality standard attached to it".[253]

135. **Peer review is a key element in the publishing process and should be a pillar of institutional repositories. We recommend that SHERPA agree a "kite mark" with publishers that can be used to denote articles that have been published in a peer–reviewed journal. Upon publication, articles in repositories should be allocated the kitemark and marked with the date and journal of publication by the staff member responsible for populating the repository. Authors depositing articles in institutional repositories should also be required to declare their funding sources in order to reduce the risk of conflicts of interest occurring.**

Networking and standards

136. The establishment of institutional repositories would enable users to gain free access to research articles stemming from each institution's work. However, the existence of many separate, un–networked repositories would make searches cumbersome and would greatly

250 Ev 211

251 Ev 240

252 Ev 316

253 Q 396

reduce the visibility and accessibility of the articles contained within them. The Knowledge Management Committee of West Dorset General Hospitals NHS Trust reported that "free or subsidized content may be little better than no content when it is difficult to access or does not provide quick, efficient access to useful information".[254] For this reason, it is essential that institutional repositories are networked, to allow cross searches and, eventually, access to all of them from a single source. SPARC Europe stated that this would ensure that "the material deposited within them will be fully searchable and retrievable, with search engines treating the separate archives as one".[255] The process of networking will need to be centrally managed, to ensure consistency and standards across the repositories. **We recommend that the Government appoints and funds a central body, based on SHERPA, to co–ordinate the implementation of a network of institutional repositories.**

137. The central regulatory body for institutional repositories would play a vital role in ensuring that technical standards were consistent across all the archives. Common standards for metadata, persistent identity and data harvesting would all be essential to ensuring that the repositories could be inter–linked and cross–searched. Work is already being carried out in this area. For example, the Open Archives Initiative (OAI), originating in the US, "develops and promotes interoperability standards that aim to facilitate the efficient dissemination of content".[256] It invites anyone to participate in the interoperability framework defined in its Open Archives Metadata Harvesting Protocol (OAI–PMH), which has been designed to be easy to implement. SHERPA told us that "when repositories are set up using the OAI–PMH […], they can be searched in a seamless way. Users may not even be aware that they are searching the contents of multiple repositories. The actual location of the content is in this sense irrelevant, as long as it is in an OAI–compliant repository".[257] DTI, DfES and DCMS stated that "Government can play an important role in ensuring that all parties agree suitable technical standards. Along with the OAI, a number of other organisations are committed to ensuring common standards".[258] **A Government–established central body would play a major role in implementing technical standards across institutional repositories to ensure maximum functionality and interoperability.**

The impact of repositories on the main players

Libraries

138. The role of the library is in transition as the nature of the information it provides changes. In December 1993, the Follett Report, commissioned by the four higher education funding councils, stated that "the emphasis will shift away from the library as a place, away from the books and periodicals it holds, and towards the information to which it can provide access. Information management will be directed towards giving access to information rather than storing it, and it will be possible to provide access to it in many

254 Ev 148

255 Ev 163

256 www.openarchives.org

257 Ev 478

258 Ev 384

different ways".[259] This shift in emphasis is already taking place in many institutions. The establishment of institutional repositories would accelerate the process by eventually providing libraries with a viable alternative to subscribing to journal articles that they can no longer afford. This does not mean that the function of libraries would decrease, merely that it would change. Libraries would play a crucial role in helping readers to gain access to the articles they needed from the repositories. As is explained above, staff resources are needed to facilitate the population of the repositories. Library staff no longer required to manage subscriptions and print collections could usefully undertake this new role.

Publishers

139. It is not envisaged that institutional repositories would have a significant impact on publishers in the early stages of their implementation. SHERPA told us that "the empirical evidence from the physics community shows that arXiv has not undermined journals. Physicists continue to submit their work to peer–reviewed journals as well as contribute to arXiv. Authors continue to value the quality control function the journals provide but also the rapid and wide dissemination that arXiv provides".[260] The academic community values several functions of the traditional journal very highly. Foremost amongst these is peer review. A report published by the Wellcome Trust notes that, in repositories, "articles could be individually kite–marked but readers would not have the sense of perspective and orientation which a journal gives and, without the journal, search costs for readers would be much higher".[261] Readers also value the subject–specific groupings of articles provided by journals, and the access that they provide to research conducted around the world. All this suggests that, in the immediate term, institutional repositories would not damage the business model on which traditional journals are predicated and that subscriptions would be maintained.

140. As institutional repositories become more technically sophisticated and prevalent on a global scale, the negative impact on publishers is likely to increase. It is possible that journal prices would rise further as libraries cut subscriptions to journals that they no longer needed because the same content was readily accessible through institutional repositories. Steep increases in price would not be sustainable in the long term, threatening the survival of the current business model for subscriber–pays publishing. For this reason we anticipate that publishers will need to move into different areas of information provision, for example investment in navigation systems that will overarch the repositories, or the database publishing market, which already accounts for 33% of total global expenditure on science information. **We recommend that DTI works with UK publishers to establish how the industry might evolve in an environment where other business models flourished alongside the subscriber–pays model. Government also needs to become an intelligent procurer, outsourcing some of the technical work involved in establishing and maintaining institutional repositories to publishers who already have the relevant infrastructure and expertise in place.**

259 The Follett Report, p 81

260 Ev 217

261 Wellcome Trust, Costs and business models in scientific research publishing, p 16

141. Some of the processes embedded within the subscriber–pays model will continue to be required. As in the conventional model, the success of institutional repositories will partly rely on the quality assurance given by peer review. **We see institutional repositories as operating alongside the publishing industry. In the immediate term they will enable readers to gain free access to journal articles whilst the publishing industry experiments with new publishing models, such as the author–pays model.**

7 Should the author pay?

What is the author–pays model?

142. Growing frustration with the STM journals market has led to the emergence of the author–pays publishing model. Under this system, the costs of publishing are met by the author, rather than the reader or subscriber. Articles would undergo the same peer review process as is employed in the current system. Once published, they would be available online, free of charge, to anyone. It is a common misconception that the author would have to meet the publication costs personally.[262] In practice, however, either the research funder or the research institution would pay the fee. Surveys that suggest that up to 50% of authors would not be prepared to pay a publication fee thus miss the point.

143. Memoranda submitted to this inquiry have tended to focus on the arguments for and against the author–pays publishing model rather than the wider issues surrounding scientific publications. During oral evidence we found it difficult, at times, to persuade witnesses to answer questions on any other subject. To a certain extent we found that the eagerness of parties either to promote or condemn the system of author payments hampered a more sophisticated discussion of the issues involved. **For the Government either to endorse or dismiss the new publishing model would be too simplistic. Without any Government action, some authors are already choosing to publish in journals that use author payments to recover costs. Author–pays publishing is a phenomenon that has already arrived: it is for the Government and others to decide how best to respond.**

Sustainability and costs: the evidence so far

144. Current author–pays publishers argue that the existing publishing model is based on a print environment that has been superseded by digitisation. The Public Library of Science (PLoS) argued that, "when each copy of a journal represented a significant cost for printing and distribution, it made sense for recipients to pay for each copy delivered. With the Internet now the most effective and widely used medium for communicating the results of scientific research, charging for use is now economically irrational and limiting access to subscribers is needlessly restrictive".[263] They argue that the author–pays model is more sustainable than the subscriber–pays model in the long term: "by treating the costs of publication as costs of research and including funds in research grants, monies available for publication will scale with publication expenses".[264] Both PLoS and the Wellcome Trust also maintain that the author–pays publishing model costs less than the current model overall.[265]

145. There is only limited evidence on which to base an assessment of whether or not the author–pays publishing model is sustainable or cheaper in the long term. This is largely because author–pays publishing is a recent phenomenon. In total, author–pays publishing

262 Q 164, Vitek Tracz

263 Ev 270

264 As above.

265 Ev 275 and Wellcome Trust, Costs and business models in scientific research publishing, p 2

currently represents approximately 5% of the total journals market.[266] BioMed Central was established in 2001. PLoS has been publishing its journal, *PLoS Biology*, since October 2003. Several other publishers have been conducting selective author–pays experiments. IoPP, for example, created one of the first journals to adopt this model, the *New Journal of Physics*, in 1998. More recently, Oxford University Press (OUP) announced that "there remains a dearth of factual information […] to support the arguments about the potential advantages and disadvantages of Open Access publishing. During the course of 2004 we therefore intend to run a series of experiments to test a range of business models".[267] It created a new author–pays journal, *Evidence–based Complementary and Alternative Medicine*, that was first published in June 2004. In addition, from July 2004, its *Journal of Experimental Botany* has levied a publication charge.

146. Very few independent studies into the sustainability of the new publishing model have been conducted to date. Experiments tend to be carried out at the level of individual publishers, and the results are not always shared. In April 2004, the Wellcome Trust published a report produced by SQW, independent economic consultants, on *Costs and business models in scientific research publishing*. The report concluded that author–pays publishing was not only more sustainable than subscriber–pays but also that it cost up to 30% less overall.[268] This is debatable: although the analysis of the costs cited by the Wellcome Trust appears to be sound, some costs are missing. For example, author–pays publishers would need sales forces to negotiate with research funders to pay fees on behalf of their researchers; they would also need a system for tracking and collecting all those fees. We do not have any evidence to enable us to assess these costs relative to the costs of selling subscriptions, collecting subscription fees and negotiating licences that are currently incurred by subscriber–pays publishers. Many publishers and other organisations have been quick to discredit the calculations on which the report was based. Sally Morris, Chief Executive of ALPSP, stated in the *British Medical Journal* that "it is suggested that publishing costs could be reduced by up to 30% by a move to Open Access. This is nonsense; most of the saving would be due to a move to online–only. Indeed, reduction of publishing revenues by 30% would put many very valuable journals out of business".[269] The stance of both the Wellcome Trust's report and the critiques of it may in part be motivated by the agendas of those concerned. Without further evidence it is impossible to accept as authoritative any of the cost analyses of author–pays publishing that have been carried out to date.

147. Growing frustration with the STM journals market has led to the emergence of the author–pays publishing model. Under this system, the costs of publishing are met by the author, rather than the reader or subscriber. Articles would undergo the same peer review process as is employed in the current system. Once published, they would be available online, free of charge, to anyone. It is a common misconception that the author would have to meet the publication costs personally.[270] In practice, however, either the research funder

266 Q 328

267 Oxford University Press, "Experimenting with Open Access publishing", www3.oup.co.uk

268 Wellcome Trust, Costs and business models in scientific research publishing, p 2

269 The British Medical Journal, 8 May, 2004;328:1094

270 Q 164, Vitek Tracz

or the research institution would pay the fee. Surveys that suggest that up to 50% of authors would not be prepared to pay a publication fee thus miss the point.

148. Subscriber–pays publishers quoted us higher costs per article. Wiley told us that $1,500 (£825) would be the *lowest* putative cost per article, claiming that, for prestigious journals the cost would be much higher: "it is likely that a wholesale shift to a supply–side model as opposed to the current demand–side model would lead to higher article fees being required for the best journals since rejection rates are higher and quality processing would still command a premium".[271] Reed Elsevier told us that "even the highest article fees charged by Open Access publishers today ($1,500) cover only about 40% – 60% of the estimated total costs to publish an article of the quality that researchers are used to today".[272] Nature Publishing Group gave us the highest estimate, stating that the cost of publishing in Nature would be $10,000–$30,000 (£5,500—£16,500) per article published because of its 90% rejection rate.[273] Professor Fry, who opposes author–pays publishing, told us that publication costs would add 8% per year to grant costs, based on a cost of £3,500 per article.[274] Such high figures were contested by author–pays publishers. PloS, for example, told us "although many publishers have claimed that they would need to charge authors in excess of $4,000 (£2,200) to support journals by author payment, this discussion has been hampered by a lack of information sharing about the real nature of these costs".[275]

149. We suspect that the costs per article of author–pays publishing supplied to us by commercial publishers are exaggerated. Many opponents of author–pays publishing claim that the existence of subsidies demonstrates that the author-pays model is not financially viable on a long–term basis. However, PLoS told us that subsidies were only necessary as an initial investment to give the new publishing model its impetus: "we do not expect to be in profit for another 4–5 years but it is unlikely that other publishers would have to bear similar costs once open access is accepted as a credible publishing model".[276] In addition, not all journal costs would need to be met by author payments. BioMed Central generates other sources of revenue from: subscription access to commissioned articles; sales of paper copies of journals to libraries; advertising and sponsorship; and a range of subscription–based services, including literature reviews and evaluation, databases, and other software research aids.[277] All these factors would reduce the charge levied on authors.

150. Given the variety and provenance of the figures that we have received, it is clear that little is yet known of the costs involved in author–pays publishing. An understanding of these costs would be necessary before the UK embarked on any large–scale implementation of this business model because of their implications for research funders. We agree with the Director General of the Research Councils that "I do not think we have sufficient analysis of this and understanding of it in a sector that is still significantly less than 5 per cent and is being subsidised".[278] **The evidence produced so far suggests that the**

271 Ev 130

272 Ev 194

273 Q 8

274 Ev 147

275 Ev 146

276 Ev 276

277 www.biomedcentral.com

278 Q 359

author–pays model could be viable. We recommend that Government mobilise the different interest groups to support a comprehensive independent study into the costs associated with author–pays publishing. The study could be used to inform Government policy and strategy.

Benefits of the author–pays model

151. One of the consequences of the author–pays publishing model is that it would change the role and function of libraries. Author–pays publishing moves the costs of publication rather than removing them from the system entirely. Any transition to an author–pays model would entail the transfer of some of the library's funds to the research funders to enable them to meet publication costs. Although libraries would no longer face the mounting strain of increasing journal price increases, they would have a reduced overall budget.

152. The removal of the library from the funding equation would have the added benefit of bringing academics into the transaction. As is outlined in paragraphs 11 and 106—107, academics do not pay for the journals they read under the current system. The cost of a journal is not a factor in their decision about where to publish or what to read, separating demand from price in the STM journals market. Under an author–pays model, the cost of publication would become a consideration for the academic because it would derive from their research grants. This would make it difficult for journals to compete if they raised their charges beyond what were perceived to be reasonable levels. An article posted on a Nature discussion forum notes that, under this model, "an author, deciding where to publish, is likely to consider different journals of similar quality as close substitutes".[279] As a report by the Wellcome Trust explains: "for economic efficiency, it is better for individuals to incur the true cost of their activities. They will then modify their behaviour in some way so that the costs they incur from those actions is in some measure balanced by the benefit they receive".[280] This argument has been used by some to back up claims that the pressure to keep author charges down would reduce quality (rejecting papers costs money). This is examined in paragraphs 169—174.

153. SPARC Europe told us that author–pays publishing was intrinsically sustainable: "[it] provides a financial model that scales with increases in research funding".[281] This compares favourably with the current situation in which research funding increases at a greater rate than the funds made available for libraries to purchase research output in the form of scientific publications.

154. It is important here to sound a note of caution. Many of the arguments posed in favour of author–pays publishing have a strong ideological streak. As an example of the ideological language used by the Open Access movement, PloS posited that "publications describing publicly funded research belong in the public domain, where they can do the greatest good for science and humanity".[282] Whilst we would endorse this principle

279 Theodore C. Bergstrom and Carl T. Bergstrom, "Can 'author-pays' journals compete with 'reader pays'?", 20 May 2004, www.nature.com

280 The Wellcome Trust, Costs and business models in scientific publishing, p 18

281 Ev 165

282 Ev 270

wholeheartedly, there are practical considerations that must also be understood. These considerations are explored in the remainder of this chapter.

Extending access?

155. Author–pays publishing is shaped by the perception that the current publishing model limits and inhibits access to scientific publishing. By making journal articles free at the point of use, author–pays publishers hope to solve this problem. Nonetheless, there have been claims that, because the new publishing model relies on the internet for its delivery, it has the effect of restricting access to those who are able to access and use a computer. In oral evidence, Sir Crispin Davis told us that "open access would today have the result of reducing accessibility to scientific research because it is only available on the internet […] "this would exclude some 20–25 per cent of scientists; globally it would exclude 50 per cent of scientists".[283] We are not convinced by this argument for a number of reasons. Firstly, very few researchers would now be able to work without the aid of a computer, suggesting that the vast majority of journal readers would have ready access to online journals. Secondly, in the developed world, even those who do not own a computer can gain access to one, in particular through public libraries. Thirdly, for the reasons outlined in paragraphs 45—48, online journals provide the developing world with a cheaper and more efficient means of obtaining scientific information, even when the number of computers available is limited.

156. Author–pays publishing would bring the greatest potential increase in access for groups of users that do not habitually subscribe to journals or belong to subscribing institutions. Virginia Barbour, formerly Molecular Medicine Editor at *The Lancet* told us that patients in particular would benefit: "everyone should be able to read freely the primary research (often funded by public agencies) upon which decisions concerning their health care are made".[284] The departmental evidence also identified groups of users that would experience increased access, writing that "free access to research papers via the internet would be particularly useful for key groups such as women taking career breaks. Constant developments within many subjects mean that people on career breaks may often lose touch with the major developments in their subject".[285] **Encouraging a public that is more scientifically literate and assisting women in their pursuit of successful careers in scientific research have been two of the Committee's longstanding concerns. We support, in principle, any measure that seeks to further these aims.**

157. It is still too early to tell whether or not author–pays publishing has had the effect of increasing access to scientific publications. BioMed Central reports a higher usage rate for its articles than that for articles published in subscriber–pays journals.[286] Since January 2004 OUP has published its *Nucleic Acids Research* database on an author–pays basis. It reported that "during the six months following initial publication, the full–text of Database issue articles were, on average, downloaded 52% more frequently than the average number of full–text downloads of other [subscriber–pays] articles published in NAR". OUP

283 Q 65

284 Ev 71

285 Ev 381

286 Ev 126

cautions that "it is difficult to be sure whether this difference is solely due to the absence of access restrictions or whether the Database issue would have generated higher than average access use had access been restricted to subscribers".[287] Nonetheless, OUP's recent announcement that it would extend the author charge to all sections of *Nucleic Acids Research* suggests that OUP is confident that the experiment has been successful.[288] There is also conflicting evidence. IoPP, for example reports that "the electronic readership of NJP [*New Journal of Physics*] is not significantly higher than our regular subscription journals".[289]

158. A recent study by Thomson ISI, a private sector information provider, examined the citation rates of author–pays journals compared to their subscriber–pays competitors. It found that they "are cited at a level that indicates they compete favourably with similar journals in their field" but also that "the wide distribution of these OA journals has not yet been shown to have any appreciable effect on their appearance in lists of cited references in other journals".[290] This is not surprising for two reasons. Firstly, citation rates are indicators, albeit imperfect, of a journal's usefulness to the research community, not primarily its accessibility. Given that author–pays publishing is likely to increase access for users, such as patients, who are unlikely to cite the material that they read in other journals, it is not surprising that they have not shown a marked increase in citation rates. Secondly, author–pays journals are relatively new. It takes time for new journals to achieve recognition and, consequently, citations. That author–pays journals are able to compete with subscriber–pays journals in terms of citations is an encouraging indication of high levels of quality.

159. **Although early indications are positive, it is too early to assess the impact that author–pays publishing has had on access to scientific publications.**

Access for researchers in the developing world

160. On a recent visit to Malawi we heard from the Forestry Research Institute of Malawi, part of the University of Malawi, and others that researchers currently have only very limited print journal resources. The internet has the potential to vastly increase the number and range of journal articles available to them but they are unable to afford subscription charges. A shift towards free online access, via the author–pays publishing model, would greatly increase access to journal articles for researchers in developing countries.

161. There are concerns that, by transferring the costs of the system from readers to authors in the developing world, the author–pays model would reduce the visibility of research generated there because of the inability of many authors to pay the publication fee. Blackwell Publishing told us that "the author charge is a barrier to publication which will favour richer countries and organisations and make it difficult to publish a journal with authors from, say Eastern Europe and the Developing World".[291] Currently publishers

287 Oxford University Press, "Experimenting with Open Access publishing", www3.oup.co.uk

288 www3.oup.co.uk

289 Ev 310

290 Thomson ISI, *The Impact of Open Access Journals*, April 2004, pp 2, 10

291 Ev 306

operate a number of admirable schemes to facilitate access to scientific publications in poorer countries. We see no reason why such schemes could not be adapted to meet the needs of an author–pays publishing model, with publishers paying for authors from the developing world to publish, rather than to read, articles. Whereas researchers in developing countries need access to as large a proportion of global research output as possible, the proportion of published articles originating in such countries is currently very small. In addition, many research projects in the developing world are either funded by or carried out in collaboration with partners in developed countries who can afford to pay publication charges. Developing countries would therefore be disadvantaged less by paying publication charges for a very small number of authors than they would be by buying subscriptions to all the journals that they need. By the same token, publishers could assist developing countries most efficiently by paying their publication fees and granting them free online access to journals.

162. **The author–pays publishing model would be extremely advantageous to researchers in developing countries, enabling them to keep abreast of research conducted elsewhere. Financially, author charges would be less burdensome to researchers in the developing world than current subscription rates. If the author–pays model were to prevail, publishers, Government agencies and other donors would need to adapt existing schemes, such as HINARI, AGORA and INASP–PERI, to meet the demands of the altered cost recovery model.**

Practicalities

Ability to pay

163. Publishing costs money. The author–pays publishing model transfers costs from the end user to the producer. There is some concern that, just as currently there are people who cannot afford to pay to read scientific journals, there are also those who would not be able to afford to publish in them. This is not a factor of the author's personal financial situation. As Vitek Tracz noted in oral evidence, "people imagine that the situation is that we suddenly ask authors to take some money from their petty cash, or away from their children and give it to some publisher who is going to publish them. That is not at all the situation. […] Just as, most commonly, scientists do not have to subscribe, so most commonly scientists do not have to pay personally".[292] If it were made clear to authors that publication costs would be met by their research funder, it is likely that their reluctance to pay would be significantly reduced.

164. RCUK observed that there was already a need for scientists to pay some publishing fees.[293] In order to give researchers a free choice of the journal in which they publish, funding to pay those fees will need to be formally identified. We believe that such funding should originate with the research funder, not the institution. By making publication costs a proportion of total research costs, this would facilitate effective planning and budgeting. Were research institutions to pay for publication costs, they would not be able to scale the model in the same way, leading to budgetary uncertainty. In oral evidence, the DGRC told

292 Q 164

293 Ev 296-7

us that "we are considering the possibility of making funds available to those authors that wish to go the open–access route, so they are in no sense penalised against other routes".[294] We were glad to hear that the Government has recognised the need for funds to be made available for authors who choose to publish in an author–pays journal. Given that author–pays publishing represents a growing proportion of the market, the Government will need to move swiftly from considering the issue to taking action. Currently, only 5% of all publishing takes place using the author–pays model. The funding needed to facilitate this activity at present is, therefore, limited. Were the practice to become more widespread, the amount of funding needed would increase. Such increases would, however, be balanced by savings in the library budget.

165. **We recommend that the Research Councils each establish a fund to which their funded researchers can apply should they wish to publish their articles using the author–pays model. The Research Councils will need to be funded by OST to take account of this increase in costs. We hope that industry, charity and other Government funders will consider similar measures.** The issue of free–riders in the publishing system will be discussed in paragraphs 175—177.

166. Publication costs paid by public funding bodies would not cover the costs of all potential authors. The City University Centre for Information Behaviour and the Evaluation of Research (CIBER) told us that not all funding sources are acknowledged, making it difficult for the funding bodies to pay for publication. According to their statistics, 35% of published articles currently have no financial acknowledgements, "either explicit or implicit from their corporate addresses".[295] The author payment may also prove difficult for charitably–funded researchers, because the charity may not have the extra funds available to cover publication costs. Differential levels of funding between disciplines further complicate the situation. ALPSP stated that "the financial feasibility of Open Access may well vary between disciplines; in some areas, particularly in the sciences, research is expensive, research grants are accordingly large, and a few thousand pounds to publish a couple of articles may make little difference to the total sum funded. In other areas, however, such as the humanities, research is relatively inexpensive and grants are therefore small or even non–existent".[296] Professor Hitchin of Oxford University noted a problem with mathematics in particular.[297] **Research Councils for disciplines that require only limited funding should be funded to enable them to pay for publication costs where necessary.**

167. All witnesses agreed that the ability of the author to pay should not be a factor in the publisher's decision about which articles to publish. At the moment, author–pays publishers waive author charges for those that cannot afford them. PloS told us that "if an author cannot pay, then the fee must be waived, if the peer review process judges that the article is worthy of publication".[298] PLoS editors are currently "blind" to the author's financial situation when making decisions about acceptances and rejections. In its author–

294 Q 330

295 Ev 78

296 Ev 91

297 Ev 72

298 Ev 275

pays experiment with the *Nucleic Acids Research* database, OUP found that, out of a total of 142 articles, 90% of authors paid the publication charge. Of the 14 authors that were granted a waiver, four were from developing countries and the remainder were from developed countries, but lacked sufficient funding to pay the charge.[299] If these statistics are indicative of general trends, under an author–pays model, the 90% of authors that pay would be subsidising the waiver for the 10% of authors that did not. This would inevitably, but slightly, push up the amount charged to paying authors.

168. The variation in the ability of authors to pay to publish is an important factor in any consideration of the author–pays model. It would not, however, have a significant adverse impact on the likely success of such a model were it to be implemented on a national or international scale. Were it to adopt the author–pays model, the UK Government eventually would make savings in the budgets currently allocated to libraries (see paragraphs 188 to 189 for an explanation of the costs to the UK of the implementation of the author-pays system if other countries did not follow suit). These savings would need to be redirected to research funders to enable them to meet the costs of publication. As PloS told us in answers to supplementary questions, "the best defence against a bias towards well–funded disciplines is for the funding agencies and research institutions who will primarily fund open access publishing to allocate sufficient funds to all disciplines to cover their publication costs".[300] By a similar token, Government should encourage charitable and private sector funders to meet the publication costs of their funded researchers where applicable.

Peer review in an author–pays system

169. Many memoranda expressed concern that the author–pays publishing model would compromise the integrity of peer review. This was the position adopted by all of the commercial publishers that we spoke to on 1 March. It can be summed up by a statement made by the Publishers Association that "once financial or any other type of patronage is introduced, independence and objectivity [are] compromised".[301] This argument was dismissed by Harold Varmus, of PloS, in oral evidence as "rubbish […]We have reviewers who make the determinations about what we are going to accept, who have no direct interest in the fate of our journal, but the most important thing is that we, as publishers of open access journals, want our journals to be high quality. It is the only way we are going to succeed".[302] Peer review is carried out by academics who are unpaid and whose reputation is influenced by their participation in the peer review process. In both the subscriber–pays and the author–pays publishing models, the process of reviewing articles for publication is, and needs to remain, independent of the mechanisms used by publishers to recover costs. We would envisage this remaining the case even if our recommendation in paragraph 70 were to be implemented by publishers.

170. The success of the journal is a key factor in understanding the impact of author–pays publishing on peer review. As is outlined in paragraphs 7—9 above, in order to further

299 Oxford University Press, "Experimenting with Open Access publishing", www3.oup.co.uk

300 Ev 454

301 Ev 306

302 Q 165

their career and disseminate their research to the most distinguished peer audience possible, academics seek to publish in journals that have high impact factors and are well regarded in their field. The academics that we spoke to agreed that, generally speaking, a journal would struggle to survive if the standards of the articles that it accepted for publication were low. Professor Crabbe told us that "science is a relatively close–knit area and within the field if something is wrong then people talk and if the journal does not instantly produce some sort of retraction or correction then people just will not go to publish in that journal".[303] This statement outlines two main principles: firstly that the scientific community is itself able to assess the merits of published articles; and secondly, that currently if a journal is perceived to be substandard it will be less successful. CURL told us that "the survival and growth of the BMC [BioMed Central] journals will depend, as with all journals, on the quality of submissions accepted and the number of citations to articles in their journals. This discipline should ensure that peer review remains stringent: acceptance of articles based on ability to pay will very quickly prove self–defeating".[304] Both PloS and BioMed Central told us that they wanted to publish successful journals. Whilst this may be true for the higher end of the market, in theory, if author–pays publishing were to become the dominant model, there is a risk that some parts of the market would be able to produce journals quickly, at high volume and with reduced quality control and still succeed in terms of profit, if not reputation. Such journals would cater for those academics for whom reputation and impact were less important factors than publication itself. This situation may take some time to develop because it is unlikely to occur whilst the author–pays journals are still striving to prove their worth in a mixed market.

171. We heard that payment for publication gave publishers a financial incentive to publish more articles because of the need to cover fixed costs, irrespective of the quantity or quality of submissions received. Sir Crispin Davis, for example, told us that "if you are receiving potential payment for every article submitted there is an inherent conflict of interest that could threaten the quality of the peer review system".[305] Blackwell Publishing told us that, by contrast, "the subscription based model favours rejection, which is especially important, for example, in clinical medicine, where the risks associated with publishing substandard material are higher".[306] It should be noted that subscriber–pays publishers also have an incentive to publish ever greater numbers of research articles, because, as is shown in paragraph 52 of this Report, increases in the volume of articles are used to justify price increases. For the reasons outlined above, we believe that the publishing process needs to have inbuilt checks and balances that would mitigate against the acceptance of an increasing volume of substandard articles.

172. **In order to succeed, most author–pays publishers, like everyone else, will have to publish articles of a high quality. It is not, therefore, within the interest of journals at the higher end of the market to lessen the rigour of peer review. Nonetheless, there is a risk that lower quality journals might seek to reduce their quality threshold in order to generate profit. Were the author–pays publishing model to prevail it would be vital to**

303 Q 321

304 Ev 126

305 Q 65

306 Ev 307

ensure that peer review was not compromised in order to retain confidence in the integrity of the publishing process.

173. The stringency of peer review, a potential strength of author–pays publishing, has also created problems for author–pays publishers when determining their payment models. John Cox Associates, a publishing consultancy, noted that in the author–pays model, because of the need to peer review every article, successful authors would be paying for the processing of unsuccessful articles: "if the author whose paper is accepted for publication bears the whole cost of publication, this means that he/she bears the cost of processing papers that are rejected; it seems inequitable that a successful author should bear the costs involved in dealing with others whose work is judged not to be worthy of publication. This will result in the most prestigious journals being the most expensive".[307] The Biochemical Society also noted that "*The Biochemical Journal*, along with many other journals has a rejection rate of 60%. It seems invidious that the authors of accepted papers should subsidise authors of rejected papers".[308] A 90% rejection rate is the reason given by Nature Publishing Group for its very high estimate of the publication charge for accepted articles.

174. The payment model is easily adapted to subvent this inequality. Under a revised system, authors would pay a small fee upon submission of their article in order to cover the costs of peer review. If their article were accepted, they would then pay a second fee to cover the costs of publication. Neither PloS nor BioMed Central employ this system. Vitek Tracz explained that, in the case of BioMed Central "the reason we do not do it is because we are still a young industry and we worry that if we start charging for submission it will be harder for us to persuade authors to do it".[309] This is probably true in a mixed market in which authors have the choice of publishing in a journal which charges no fee. The reluctance of authors to pay a submission fee would largely be overcome, however, if funds were made available for this purpose by the research funder. It is also worth noting that a submission fee might act as a disincentive to authors submitting articles speculatively, with little confidence that they will be published. This would reduce the need to reject so many articles and, in turn, reduce costs. **The introduction of a submission fee would be an important step towards ensuring the quality of scientific publications and we strongly recommend that author–pays publishers introduce this system.**

Free–riders

175. A substantial proportion of the total number of journal readings derives from the industrial and corporate sectors. Reed Elsevier, for example, estimates that 25% of its revenue and 20% of annual global STM journal spending derives from these sectors.[310] The Pharma Documentation Ring described the usefulness of journals to pharmaceutical companies: "new drugs, new cures against diseases can only be successfully and efficiently developed when the present scientific knowledge is easily available and reliable. […] Scientific publications are a key resource for pharmaceutical research".[311] Companies pay

307 Ev 140

308 Ev 179

309 Q 167

310 Q 65; Ev 200

311 Ev 423

substantially more for access to publications than public sector organisations, which are usually given discounted rates. Yet, for various reasons, the proportion of published articles that originates from the industrial and commercial sectors is much lower than the proportion of articles that they read. As a consequence of this discrepancy, the Biochemical Society told us that, "in the open–access world it would appear that the only real winners are going to be corporate pharmaceutical companies who would no longer have to pay to access information".[312] There is concern that author–pays publishing would allow companies to become free–riders in the publishing process.

176. The author–pays publishers that we took evidence from were unable to suggest a satisfactory solution to this problem. PloS told us that the commercial sector "pay their taxes, the taxes go to government, the government agencies pay for publication and want the industries to see the results of research because one of the reasons we do medical research is to support industrial efforts in making new products which help to improve the health of the nation".[313] This is true: giving industry access to research findings can have significant benefits for the economy and would assist the transfer of knowledge between academia and industry. It might also have the effect of attracting increased industry funding into research. Nonetheless, there are practical implications of allowing the commercial and industrial sectors to read the output from scientific research free of charge. PloS argued that "we have never relied on subscription revenues and thus no explicit measure needs to be put in place to deal with their loss".[314] It is indisputable, however, that a significant proportion of publishing costs are currently paid for by industry. Even though they are disputed, publishing costs do not fall below a minimum level whatever the publishing model. If industrial subscriptions are taken out of the system, the publishing process will be substantially less well off. Even taking into account a reduction in publisher profit margins, this would mean that the UK was paying more overall to publish articles than it would pay to read them.

177. **The commercial and industrial sectors currently contribute significant funds to the publishing process through payments for journal subscriptions. Much of this money would be lost to the system if an author–pays model were to prevail. This is one of the key issues that needs to be addressed before the wholescale transition to an author–pays model can be supported. Government, publishers and industry need to work together to identify a solution to this problem in order to avoid a disproportionate increase in the amount of money that Government invests directly or indirectly in the publishing process.**

Impact on learned and professional societies

178. Learned societies use income generated by their publishing activities to subsidise other society activities, such as conferences, maintaining professional standards and supporting education in schools. Many learned societies expressed concern that the author–pays model would jeopardise their publishing income and, ultimately, their other activities. The British Pharmacological Society told us that "In 2002—3 we spent over £850,000 on

312 Ev 179

313 Q 179

314 Ev 451

promoting and advancing pharmacology. Nearly £800,000 of this came from our publishing activities. Without this income we should either have to raise funds in a different way or cease to provide most of our current activities".[315] Similarly, the Biochemical Society reported that it generated between £500,000 and £750,000 from publishing. This surplus, "the so–called 'science dividend' supports its other charitable objectives and it is not clear how these vital activities could continue to take place if the Biochemical Society was unable to continue funding them".[316] These concerns are based on the perception that the author–pays model would generate a reduced publishing surplus. Indeed, it is one of the stated objectives of the Open Access movement that publisher profit margins should be reduced. ALPSP told us that "one estimate is that surpluses in excess of 12% would be likely to be reduced. In the above survey, median surplus was 17%, representing 33% of society income".[317] On the basis of these figures, learned societies could lose up to 10% of their income in a move to the author–pays publishing model.

179. The transition to an author–pays publishing model involves substantial one–off costs and continuing subsidies until the journal in question reaches revenue stage. IoPP told us that, since 1998, it had been subsidising its *New Journal of Physics* at a rate of £100,000 per annum. It also stated that, at $560 per article, it had not been charging authors full costs: "we have found authors reluctant to pay. Even if all authors paid, we would need a far higher page charge in order for the journal to cover its costs".[318] Smaller societies publishing less–prestigious journals might find it difficult to attract authors with a more substantial publication charge. They would also be more likely to struggle with the levels of investment committed by IoPP to its author–pays project.

180. **Learned societies are greatly valued by the academic and wider research community. It is of concern to us that learned societies could stand to lose a substantial portion of their income in a move to the author–pays publishing model. This is another key issue that proponents of the author–pays model need to address.**

181. Journal subscriptions are frequently provided as one of the benefits of membership to a learned society. The Geological Society told us of its concern that "if free or discounted subscription to these journals is one of the benefits of society membership, open access will negate this reason for membership – if you can read the journal for free, why join the Society? The likely decline in Society membership would be a fatal blow for many societies resulting in their closure".[319] Just as, in the commercial sector, it is intended that author payments would replace subscription charges, the loss of some learned society members would in part be compensated for by the publication charge levied on authors. Moreover, it is clear that free subscriptions are a major, but not the only benefit given to members by learned societies. We heard from Professor Fry that "it is absolutely vital for science in Britain and the world today to have strong learned societies". He added that "conferences, which are largely supported by the learned societies, are absolutely vital".[320] If learned

315 Ev 229

316 Ev 175

317 Ev 448

318 Ev 310

319 Ev 63

320 Q 280

societies are valued by their communities, which we believe to be the case, members are likely to remain loyal irrespective of the publishing model employed by their society.

182. The author–pays model would yield some benefits for learned societies. By facilitating a wider dissemination of their journals than is currently possible, it would raise their international profile. The Society for Experimental Biology also told us that a change in publishing model would encourage societies to innovate: "an author pays open access model will put pressure on societies to keep publication costs of primary research to a minimum and provide incentives to explore other sources of income. Adding value to the sections of the journals which remain under subscription control such as reviews and special issues will not only provide income to support the activities of the society but also fulfil the society's objectives in promoting and communicating science".[321] Some learned societies also house a library. Like academic and public libraries, these libraries are adversely affected by rises in subscription prices. The Institution of Civil Engineers stated that "premium prices for e–journals are making it very difficult for specialist libraries such as ourselves to maintain our subject coverage. […] Permitting learned societies to accede to academic networks which are essentially publicly funded would help us to continue to fulfil our role as laid out in our charter to promote engineering science".[322] These would all be encouraging developments, but further analysis will need to be carried out to assess to what extent they would offset losses elsewhere.

Government action

183. We received many calls for publishing in an author–pays journal to be made mandatory under the terms of research grants awarded from public funds. The World Summit on the Information Society (WSIS), for example, argued that "concerning the policy that should be adopted by funding entities, it is clear that because of sheer inertia, or because of fear of retribution from publishers, a compulsory policy must be adopted".[323] Whilst we do not believe that there is sufficient evidence to support the implementation of a Government mandate, we do not see this as an excuse for the current lack of any coherent Government policy on author–pays publishing.

184. In oral evidence, the DGRC told us that a decision in favour of the author–pays model would be "a pretty brave decision" for a government to take at this stage.[324] Some Government agencies have been less cautious, however. The Food Standards Agency was recently reported to be "moving towards actively supporting open access publication of the research it commissions".[325] Similarly, JISC has implemented two schemes to encourage experimentation with the author–pays publishing model. In December 2003, it announced a funding programme to offer short–term funding, or seed money, of £150,000 to publishers to make journals freely available on the internet using open access models. In a press release it announced that "the money is to encourage them to switch 'from the traditional subscription method to a model where authors have to pay to have papers

321 Ev 227

322 Ev 268

323 Ev 292

324 Q 354

325 "Food Standards Agency gives solid support to open access", *Research Fortnight*, 23 June 2004

published'. The result of this is that research journals will become freely available on the web for everyone in further and higher education and beyond to benefit from". [326] In June 2003, JISC announced a membership deal with BioMed Central. Under the terms of the deal, from 1 July 2003, article–processing charges were waived for all UK higher education staff when publishing in any of BioMed Central's journals. The deal cost £85,000 in the first year, and will cost £80,000 next year.[327] **We strongly support further experimentation with the author–pays publishing model. In the short term Government may need to provide limited financial assistance to encourage publishers and institutions to take part in what, for them, may be an expensive process. We applaud the Joint Information Systems Committee for providing funding for this purpose so far and hope that it will continue to do so.**

185. A wholescale transition to the author–pays publishing model would have profound implications for current funding structures, necessitating the transfer of funds between DfES and OST. Much of the evidence agrees that the author–pays publication model will become more prevalent, even if it does not replace the current publishing model, in the UK and globally. It is therefore likely that the UK STM publishing market will have to sustain a mixed economy for some time. This would be likely to prove costly for publishers, research funders and libraries alike. Given the scale of the financial impact of the new publishing model, whether or not it prevails, we expected that the Government would have conducted impact assessments and formulated a strategy. In oral evidence, Government agreed that this was a necessary step. The DGRC told us that "there ought to be a policy put together jointly between DfES, OST/DTI and DCMS".[328] We agree wholeheartedly. There is, however, scant evidence as yet of the departments involved working together on this issue. **Author–pays publishing is a growing phenomenon. Its implementation on any scale will have important consequences for current funding structures and the UK publishing industry. So far the Government has shown little inclination to address this issue.**

186. **Government has not shown much evidence of a joined–up approach to the challenges posed by changes to the model for scientific publishing. Whilst the central departments have been slow to respond to the author–pays publishing model, at least two Government–funded bodies have given public support to it. This creates unnecessary confusion. We recommend that it formulate a coherent strategy as a matter of urgency.**

187. This inquiry took place against the backdrop of an already lively debate. It soon became apparent to us, however, that discussions mostly tended to take place within separate interest groups. The relative lack of discussion between these groups has hindered any assessment of the potential impact of the author–pays publishing model and has prevented any sort of consensus view from emerging. Government has a role to play in bringing together policy–makers, funding bodies, publishers, librarians and academics to discuss the issues in a constructive way.

326 www.jisc.ac.uk

327 Ev 462

328 Q 349

Can the UK act alone?

188. The UK writes more articles than it reads. As a consequence of this, Reed Elsevier claims that a Government mandate for open access would be against the UK's financial interests: "while Britain's spending on journal subscriptions currently amounts to 3.3% of the world's total, UK researchers contribute a much higher 5% of all articles published globally. As a result, we estimate that the UK Government, foundations, universities and researchers could together pay 30–50% more for STM journals in an Open Access system than they do today".[329] This statement can, of course, be inverted. Compared to its share of global STM research, the UK is currently paying proportionally less to access the research findings of other countries. Countries with lower research outputs, particularly in the developing world, are, on the other hand, paying proportionally more to access the same findings, a phenomenon which acts as a brake on further development. One of the main advantages of an author–pays system is that publication costs would scale with research costs: countries which invest greater amounts in research would pay more to see that research translated into outputs. Author–pays publishing would ensure that countries were paying an amount for publication that was commensurate with their total research spend. **We are satisfied that, by scaling publication with research costs, the author–pays publishing model would ensure a fairer global distribution of the costs of publishing research findings.**

189. A more immediate problem is the impact on the UK of a hybrid global publications market. Author–pays and subscriber–pays publishing models are alternatives: costs are met through publication *or* subscription charges. If the UK were to adopt a policy in favour of author–pays publishing, it would be at a financial disadvantage unless others acted in the same way. By acting alone, the UK would assume the full costs of publication for all its publicly–funded researchers. The resulting articles would be exported abroad where they could be read free of charge. This would increase the impact of UK research. Yet UK scientists also need access to global research. Thus the UK would still have to pay for subscriptions to journal articles originating abroad. We asked PloS how it would respond to this problem. It answered that "if the UK were the only country to make such a mandate, it would also have to pay to access the works of scientists from other countries, but this would be a separate expense for a different purpose".[330] This answer does not alter the fact that, by paying both to publish and to read articles, the UK would be investing greater sums in the publishing process than is currently the case. **The UK would put itself at a financial disadvantage internationally if it were to act alone in mandating publicly–funded researchers to publish in author–pays journals.**

Conclusions on the author–pays publishing model

190. The arguments for the author–pays publishing model are in many ways attractive despite some difficulties which require resolution, and we believe that its implementation would yield many benefits for the global research community. The endeavours of author–pays publishers such as PLoS and BioMed Central to widen access to scientific publications are admirable and they are to be commended for the vigour with which they have pursued

329 Ev 194

330 Ev 452

their aims. We have recommended that funds be made available from Research Council budgets for those authors that wish to do so to publish in journals that impose publication charges.

191. We are satisfied that the implementation of an author–pays publishing model would not compromise peer review at the higher end of the market because it would not be in the interests of the publishers concerned to allow this to happen. We do, however, have concerns about free–riders and the potential impact of the new publishing model on learned societies. For this reason, we have recommended that the Government conduct a study and facilitate further experiments to ascertain what the likely impact of the author–pays publishing model will be. We hope that, subject to the resolution of these problems, the conditions can be created so that the author–pays model and other new publishing models can be allowed to flourish, to demonstrate whether or not they are sustainable and to confer their anticipated benefits. This aspiration should be viewed in the context of the current situation, which, as we have explained, is unsatisfactory. We have recommended that Government prepare for change in the formulation of a comprehensive strategy.

8 Archives

The digital problem

192. Archiving, whilst it has always been costly and time–consuming, was at least a straightforward process in a print environment. In theory, digitisation makes archiving more efficient: digital archives take up less space; they are less at risk from fire, flood and theft; and they are easily searchable from a single point of access. Yet digital archives pose a substantial technical challenge. Digital publications are not identifiably "items" in the way that print publications are. Especially in the ephemeral environment of the internet, digital articles can be difficult to track. Furthermore, the technologies used to create and read digital journal articles are quickly superseded. This rapid rate of change makes preservation difficult: archives have to be continually updated, or their articles migrated to new formats, to ensure their continuing readability. We heard that the preservation on paper of print outs of digital journal articles would be insufficient. Julia Morris of IoPP told us that "you cannot print the *New Journal of Physics* because you cannot use the three–dimensional images and the video, some of the things which are really crucial to explaining some of the very complex concepts in the papers".[331] Witnesses on all sides agreed that a secure central archive for digital publications was essential to ensuring that today's research findings were not lost to the future. The development of this archive and the evolving technologies needed to maintain it is an expensive process.

193. Several memoranda make the point that usage is an effective way of ensuring preservation. In oral evidence, Vitek Tracz told us that "as long as the data is available and used and appears in many places, as long as it is used, it tends to be preserved. Formats change and users adapt and change their format. Usage is the key to preservation of data".[332] This is frequently used as an argument for the author–pays publishing model, which, by disseminating research as widely as possible, attempts to increase usage. As archives that are open, institutional repositories would also help to ensure that data is used. **Institutional repositories should be a key component of any long–term strategy to ensure the preservation of digital publications.**

194. In the UK, the British Library plays a central role in the development of systems and technologies to secure the long–term preservation of digital content. With JISC, the British Library co–founded the Digital Preservation Coalition. The aim of the coalition is to secure the preservation of digital resources in the UK and to work with others internationally to secure the global digital memory and knowledge base.[333] The British Library is also collaborating with higher education institutions on pilot projects under the JISC FAIR programme (see paragraph 109 of this Report). The Library is currently developing a digital object management system intended to ensure the long–term preservation and access for digital material.[334] Many publishers have also invested substantially in developing archives for their own digital publications. These parallel projects act as a useful safety net,

331 Q 126

332 Q 198

333 www.dpconline.org

334 Ev 357

although they would be vulnerable in the event of company collapse. We heard that "one of the crucial things is that it is preserved in more than one place, so that if a disaster should befall the British Library or anywhere else, that is not the only electronic copy; that is a vital aspect to electronic preservation".[335]

195. The British Library proposes to invest £12 million over the next four years in addressing the challenges posed by the preservation of digital material. To this end it intends to build up substantial in–house expertise.[336] It is "seeking specific recognition from Government of this particular funding requirement in the forthcoming Spending Review and would welcome the Committee's endorsement of that requirement".[337] In making this request, the Library has strong support from all sides. Sally Morris of ALPSP told us that "a great many publishers are looking to the British Library as being the primary source of long–term preservation of electronic material, want to work very closely with them, want to be sure that they have the funds to do it, which is going to be a big question mark".[338] Similarly, the Royal Society of Chemistry told us that "sadly, the incorrectly held view that electronic = free or cheap to deal with, that is often levelled at publishers, is in danger of affecting the consideration of the British Library's funding requests".[339] If this is true, it is of some concern to the Committee. The preservation of the national intellectual record is crucial for the maintenance of a strong research base in years to come.

196. **The British Library has a crucial role to play in the preservation of digital publications, both strategically and practically. This is an expensive process. Whilst the publication of this Report is too late to have any influence on funding decisions made as part of the 2004 Spending Review, we strongly support the British Library's call for extra funding in recognition of the work that it has carried out in this capacity. Failure of the Government to give adequate funding to the British Library could result in the loss of a substantial proportion of the UK's scientific record.**

Legal deposit

197. Legal deposit is the act of depositing published material in designated libraries or archives. Publishers and distributors in the United Kingdom and Ireland have a legal obligation to deposit published material in the six legal deposit libraries which collectively maintain the national published archive of the British Isles. The six legal deposit libraries are:

- The British Library
- Bodleian Library, Oxford
- Cambridge University Library
- National Library of Scotland

335 Q 127

336 Q 262

337 Ev 357

338 Q 123

339 Ev 211

- Library of Trinity College Dublin
- National Library of Wales

198. The purpose of the system of legal deposit is to "ensure that the nation's published output (and thereby its intellectual record and future published heritage) is collected systematically and as comprehensively as possible, both in order to make it available to current researchers within the libraries of the legal deposit system and to preserve the material for the use of future generations of researchers".[340] Until recently, legal deposit legislation covered only print publications. A substantial and growing proportion of published output in the UK, however, is in digital format. In recognition of this change, the Legal Deposit Libraries Act 2003 enabled the Secretary of State for Culture, Media and Sport to make regulations extending the system of legal deposit to non–print material. As an interim arrangement, in January 2000 a Voluntary Code of Practice was established between the deposit libraries and three bodies representing publishers, the Publishers Association, ALPSP and the Periodical Publishers Association, to provide for the voluntary deposit of digital publications. Under the Code, publishers are requested and encouraged to deposit their digital publications but are not obliged to do so.

199. Under the terms of the Legal Deposit Libraries Act 2003, DCMS is responsible for drawing up the regulations requiring the deposit of non–print material. Each set of regulations will be made subject to a public consultation. One of the assurances given by DCMS to the publishing community during the passage of the Act was that no regulations would be made until the department had appointed a Legal Deposit Advisory Panel, comprised of members of the publishing and library communities and independent experts. In the Government's submission it is noted that "DCMS is consulting on setting up the Advisory Panel and aims to have it in place by the end of 2004. Work on regulations can begin then and legal deposit of non–print material is likely to start in 2005".[341] Since the current arrangements for the deposit of non–print material are voluntary only, the speed at which this process can be carried out is extremely important. In answers to supplementary questions, the British Library told the Committee that it hoped that we would "encourage Government to ensure that the Advisory Panel is set up without undue delay".[342] **It is vital that work on regulations for the legal deposit of non–print publications begins as soon as possible. We cannot understand why DCMS has not yet established the Legal Deposit Advisory Panel. We recommend that they appoint the panel and begin preliminary work on the regulations at official level immediately.**

200. Whereas print publications are relatively easy to define and to trace, these processes are more complicated in a digital environment. The British Library has attempted to define non–print publications, using the following categories:

- Publications accessed over the internet, e.g. electronic journals;
- Websites;
- Publications on media other than paper, such as microfilm or fiche; and

340 www.bl.uk

341 Ev 382

342 Ev 458

- "Hand–held" electronic publications on media such as CD–ROM or DVD.[343]

This list is not exhaustive, and is likely to expand as new technologies bring to light new formats and possibilities. One of the issues that needs to be addressed in the regulations is how they can capture digital publications that are not easily categorised or defined as such. Similarly, the British Library noted in answers to supplementary questions, that, "in the making of Regulations, it will be necessary to arrive at a definition of a United Kingdom publication, especially in an online environment, which simultaneously recognises the need for an appropriate territorial limitation […] but also prevents any significant 'deposit gap' opening up in respect of material which could legitimately be regarded as constituting part of the UK's intellectual and cultural record".[344] **We recommend that the first task of the Advisory Panel is to establish definitions of a digital publication and a UK publication that are flexible enough to capture material from a range of sources in a range of formats.**

201. In order for a print publication to be accessible from all six legal deposit libraries, a copy of it has to be deposited separately in each library. This is not the case for digital publications. In its memorandum the Government noted that "the establishment of a secure network between the deposit libraries […] would allow access to non–print material from any of the deposit libraries, following the deposit of just one copy. The details of how such a network may operate […] would be subject to consultation and be covered in the regulations".[345] **The existence of a secure network between the legal deposit libraries would create greater efficiencies in the deposit system and would have the potential to increase access to deposited material. We recommend that provisions for such a network are made in the regulations with these two aims in mind. The deposit libraries should be funded to establish the network.**

202. Legal deposit collections are not intended to be a means for readers to obtain free access to publications as an alternative to using existing supply channels. Print publications that have been deposited under current legislation are available to readers within the buildings of the relevant deposit library. In addition, as is discussed in paragraphs 30—31, the British Library currently operates a Document Supply Service whereby readers can pay a small fee to be sent articles that they need on request. Digital technology offers the deposit libraries the option of delivering deposited articles direct to the reader's desktop. There is concern amongst the deposit libraries, however, that the regulations for deposit are likely to prohibit such arrangements. Cambridge University Library told us that the regulations "will restrict access to the legal deposit versions of electronic journals, probably to just one workstation within each legal deposit library building".[346] The National Library of Wales told us that "the Act and its Regulations will prohibit the networking of legal deposit material outside the walls of the LDLs themselves. (This is a particularly severe restriction in the case of the National Library of Wales because of its remote geographical location.)"[347] Whilst we agree with the British Library that "a judicious balance must be

343 www.bl.uk

344 Ev 458

345 Ev 383

346 Ev 372-3

347 Ev 280

struck between the national interest (which requires access) on the one hand and the protection of the legitimate economic interests of the publishing industry on the other", it would be disappointing if the deposit libraries were not able to exploit the technology available to improve access to non–print publications.[348] **We recommend that the regulations make provision for the deposit libraries to deliver digital articles remotely to desktops on the same payment basis as Document Supply.**

203. It was brought to our attention that, because the deposit of non–print items is currently carried out on a voluntary basis only, the deposit libraries will have potentially significant gaps in their holdings by the time that the new regulations come into force. There is no bibliographic control of UK publications that would allow the libraries to be certain of the extent of these omissions. Nonetheless, the British Library told us that:

- "Of hand–held electronic publications the Library was already receiving a high proportion of published output, possibly in the region of 75%
- For electronically–delivered publications (mostly electronic serials) coverage was much less good with the BL receiving a smaller proportion of all published output, ie possibly as much as 45–50%".[349]

As the National Library of Scotland told us, these gaps could present considerable expense to the libraries: "in this interim period if publishers are unwilling to deposit voluntarily, the Library will be required to pay for material it received free when it was in print form, or else cease to take it and accept having significant gaps in its holdings".[350] **Gaps of up to 60% in the deposit of electronically–delivered publications, including STM journals, represent a significant breach in the intellectual record. It is imperative that work on recovering and purchasing the missing items begins immediately. The six deposit libraries will need additional funding to do this.**

348 Ev 357

349 Ev 459

350 Ev 252

9 Integrity of the publishing process

Peer review

204. Many of the arguments in the debate on scientific publications focus on the issue of peer review: do new developments in the publishing market put it at risk? As is outlined in paragraphs 169—174, we have concluded that they must not. A factor in this debate is the scientific community's capacity for self–policing. All of the academics that we spoke to were confident that they could determine the quality of a research article for themselves. This stands to reason given the fact that it is the same academics who carry out the function of peer review. Ironically it is this facility for self–regulation that calls peer review into question. If academics can distinguish a good article from a bad one by themselves, why do they need another academic to carry out this function for them? From this argument stems the view that peer review is unnecessarily censorious.

205. There are at least three strong arguments, however, for keeping the system of peer review intact. Firstly, volume. As has already been outlined, academics are producing more research articles than ever before: output increases by approximately 3% per year. Whilst academics might have the acumen to determine which of these articles are worth reading, they probably do not have the time to search through the entire output in order to achieve this. The peer review services provided by publishers act as a filter, saving academics time and thus also saving public money. Secondly, peer review gives successful articles a mark of distinction that helps to provide a measure of the academic's and their department's level of achievement. As Procurement for Libraries notes, for the academic, "scholarly publishing in academic journals is essentially about validation of results through the editorial and peer–review process".[351] We heard that the main motivations for academics to publish were career, funding and reputation–based. These incentives to publish would be significantly reduced were the mark of achievement conferred by passing successfully through the peer review process to be abandoned. Thirdly, peer review gives the lay reader an indication of the extent to which they can trust each article (see paragraph 132).

206. The usefulness of peer review to the scientific process is not a guarantee of its quality. We wrote to the Editors of four high–profile journals, *Cell*, *The Lancet*, *Science* and *Nature*, to ascertain what measures they used to ensure the integrity of the peer review process. Collectively the Editors cited the following measures:

- Authors are given the opportunity to exclude from consideration any reviewers who are affected by a potential conflict of interest;
- Reviewers are given the opportunity to disqualify themselves on the basis of a conflict of interest;
- Articles are sent to a number of reviewers, for example, *Cell* uses three reviewers per article and *The Lancet* uses four. This allows for the moderation of their findings;

351 Ev 153

- Editors track all the reviews submitted by a particular reviewer for consistency. Any comments that are judged to be unduly harsh or lenient within that context are noted;
- Editors evaluate all claims of reviewer bias or misconduct and appropriate action is taken; and
- Journals have a formal appeals procedure available for all rejected articles.[352]

207. In addition, peer reviewers have no responsibility for making the final decision about which articles are published, and most of them are unpaid, ensuring that they retain a degree of detachment from the publishing process. All of the above measures attempt to minimise the risk of a compromise to the peer review system. However, as Richard Horton, Editor–in–Chief of *The Lancet*, pointed out in his response, "these processes rely on the integrity of the individuals involved, and we rely on trust between editors, reviewers, and authors".[353] **As is the case with any process, peer review is not an infallible system and to a large extent depends on the integrity and competence of the people involved and the degree of editorial oversight and quality assurance of the peer review process itself. Nonetheless we are satisfied that publishers are taking reasonable measures to main high standards of peer review.** Peer review is an issue of considerable importance and complexity and the Committee plans to pursue it in more detail in a future inquiry.

The Research Assessment Exercise

208. The Research Assessment Exercise (RAE) is used as a means of implementing a policy of selective funding for universities. It aims to measure the quality of research in different departments, rewarding excellence where it occurs and encouraging its development elsewhere. The rating awarded to a department by the RAE helps to determine levels of funding. As one of the most readily identifiable and quantifiable research outputs, journal articles are a key measure used by the RAE. What follows is a brief analysis of the impact of the RAE on STM publishing trends. We will examine wider issues concerning the RAE in a forthcoming Report.[354]

209. Publication enhances career and reputation in a general sense: academics do not publish their research findings simply because of the RAE. As Rama Thirunamachandran pointed out in oral evidence, "if you look at other countries which do not have an RAE, people still want to publish in *Nature*".[355] Nonetheless, we received evidence to suggest that the measures used in the RAE distorted authors' choice of *where* to publish. Although RAE panels are supposed to assess the quality of the content of each journal article submitted for assessment, we reported in 2002 that "there is still the suspicion that place of publication was given greater weight than the papers' content".[356] This is certainly how the RAE was perceived to operate by the panel of academics we saw on 21 April. Professor Williams told

352 Ev 427-8

353 Ev 430

354 HC 586. See also the Second Report of the Science and Technology Committee, Session 2001—02, *The Research Assessment Exercise* (HC 507)

355 Q 397

356 Second Report of the Science and Technology Committee, Session 2001—02, p 17

us that he chose to publish in journals with high impact factors because "that is how I am measured every three years or every five years; RAE or a review, it is the quality of the journals on that list".[357] Similarly Professor Crabbe stated that "the driver is finance. The driver is the Research Assessment Exercise. Impact factors, the half–life of journals are what drives us, I am afraid".[358] In both oral and written evidence, HEFCE denied that journal impact factors formed the basis for an assessment of the quality of articles submitted to the RAE.

210. Whether or not RAE panels use journal impact factors as an indication of the quality of the articles that they assess, the perception that this is the case causes a bias amongst UK authors towards journals with higher impact factors. This in turn increases the journal's impact factor still further. In this way, regrettably, the RAE indirectly supports a hierarchy of journals, making it difficult for new and little–known journals, including — because they have appeared only recently — some author–pays journals, to compete. The Open University told us that "Government should encourage the RAE to develop new quality indicators so that articles published in new open access journals can be evaluated in an even–handed manner in the Research Assessment Exercise".[359] However, the current system, which does not formally take account of impact factors, should already ensure that this is the case. **The perception that the RAE rewards publication in journals with high impact factors is affecting decisions made by authors about where to publish. We urge HEFCE to remind RAE panels that they are obliged to assess the quality of the content of individual articles, not the reputation of the journal in which they are published.**

357 Q 285

358 Q 286

359 Ev 323

10 Conclusion

211. Provision of STM journals in the UK is unsatisfactory. This is due to a combination of publishers' pricing policy and the inadequacy of library budgets to meet the demands placed upon them by a system supporting an ever increasing volume of research. Despite evidence that they are adding value to the scientific process, publishers are not as transparent as they could be about their publication costs. The practice of some of the larger commercial publishers of "bundling" content together to be sold as one product is having a negative impact on smaller publishers and on the ability of libraries to purchase the journals required by their communities. On the purchasing side, HEFCE has not proved itself to be ready to respond to the problem of insufficient library budgets. We have concluded that change on all sides is necessary as a matter of urgency. The digitisation of the market place, with all its attendant benefits and possibilities, presents the ideal opportunity for the UK to make that change.

212. We have recommended that the UK Government fund the establishment of an inter–linked network of institutional repositories on which all research articles originating in the UK should be deposited and can be read for free. SHERPA has already carried out some valuable work in this area and needs to be funded to enable it to play a central role in the future. In order to ensure that the repositories are well–populated, we have recommended that Research Councils mandate their funded researchers to deposit copies of all their articles in this way. Universities and other research institutions will need to build up their capacity to manage the copyright that might in future be retained by authors as a result of this system. We conclude that these are the essential first steps in the direction of a more fundamental change to the way in which researchers publish their findings.

213. Rigorous quality assurance of the research that is disseminated is key to the integrity of science publishing, research and academia. It is vital that steps be taken to protect and enshrine the process of rigorous and independent peer review whatever the mode of dissemination or the publishing model used.

214. We have seen much to praise in the author–pays publishing model and the principles on which it has been established. Nonetheless, the UK still has insufficient understanding of the impact that this model would have, particularly on learned societies and in respect of the free rider problem, for us to recommend its wholesale adoption. Instead we have recommended a period of further experimentation. The Government has failed to respond to issues surrounding scientific publications in a coherent manner and we are not convinced that it would be ready to deal with any changes to the publishing process. We have recommended that it formulate a strategy for future action.

215. The market for STM journals is international. The UK cannot act alone. For this reason we have recommended that the UK Government act as a proponent for change on the international stage and lead by example. This will ultimately benefit researchers across the globe.

Conclusions and recommendations

1. It is discouraging that the Government does not yet appear to have given much consideration to balancing the needs of the research community, the taxpayer and the commercial sectors for which it has responsibility. (Paragraph 22)

2. We are convinced that the amount of public money invested in scientific research and its outputs is sufficient to merit Government involvement in the publishing process. Indeed, we would be very surprised if Government did not itself feel the need to account for its investment in the publishing process. We were disappointed by how little thought has been given to the issues within Government thus far and hope that this Report will prove to be a catalyst for change. (Paragraph 24)

3. The backdrop of international interest and momentum for change sets the scene for the UK Government to take a lead in establishing an efficient and sustainable environment for the publication of research findings. (Paragraph 25)

4. We will give a copy of this Report to the UK delegates to the Culture, Science and Education Committee of the Parliamentary Assembly of the Council of Europe. We hope that the Committee will pursue the issues raised here, both within the Council of Europe and on a wider international stage. (Paragraph 28)

5. The British Library's Document Supply Service is an efficient and cost–effective method of providing access to articles in scientific journals. The decline in demand for Document Supply notwithstanding, we are persuaded that the service provides a valuable alternative route for users who would not otherwise have access to the journals that they needed. We recommend that the Government takes steps to protect the service. (Paragraph 31)

6. We are not convinced that the publisher practice of granting each subscriber access to a set number of digital "copies" of a journal is either effective or necessary. We recommend that the Joint Information Systems Committee strongly argues the case against such restrictive practices when it negotiates the terms for the next national site licence with publishers. (Paragraph 32)

7. We congratulate the Medical Research Council on its support of the principle that primary research data should be made available to the scientific community for subsequent research. We recommend that the Research Councils consider providing funds to enable researchers to publish their primary data alongside their research findings, where appropriate. (Paragraph 33)

8. All researchers, regardless of the nature of their institution, should be granted access to the scientific journals they need to carry out their work effectively. (Paragraph 35)

9. We recommend that the Joint Information Systems Committee and the NHS work together to implement joint procurement procedures that reflect the close working patterns of NHS and the higher education sector and represent value for money for both. (Paragraph 36)

10. Teaching is a crucial university function. Universities should be permitted, within reason, to derive maximum value from the digital journals to which they subscribe by using them for legitimate teaching purposes. We recommend that future licensing deals negotiated by the Joint Information Systems Committee explicitly include provisions to enable journal articles, whether print or digital, to be used for teaching purposes. (Paragraph 38)

11. It is not for either publishers or academics to decide who should, and who should not, be allowed to read scientific journal articles. We are encouraged by the growing interest in research findings shown by the public. It is in society's interest that public understanding of science should increase. Increased public access to research findings should be encouraged by publishers, academics and Government alike. (Paragraph 40)

12. We are not convinced that journal articles are consistently available to members of the public through public libraries. (Paragraph 42)

13. Digitisation should facilitate, not restrict access. We recommend that the next national site licence negotiated by the Joint Information Systems Committee explicitly provides for all library users without an Athens password to access the digital journals stocked by their library. (Paragraph 44)

14. Publishers are to be commended for signing up to laudable schemes such as HINARI, AGORA and INASP–PERI. We hope that the provision of free and low–cost access to scientific publications for institutions and researchers in developing countries will continue to be a significant aspect of the way that they conduct their businesses. (Paragraph 47)

15. The digitisation of journals has the potential to greatly increase access to research findings for researchers in the developing world. (Paragraph 48)

16. We recommend that the Joint Information Systems Committee develop an independent set of measures, agreed by subscribers and publishers alike, to monitor trends in journal pricing. This will help exert pressure on the publishing industry to self–regulate more effectively and will give libraries and other users greater knowledge when they are deciding which subscriptions to take. (Paragraph 53)

17. It is not for us to pronounce on the acceptability of the profit margins secured by private sector companies. Nonetheless, high publisher profit margins need to be set against the context of faltering library budgets and an impending crisis in STM journals provision. Cancelled journal subscriptions due to pressures on library budgets will have a negative impact on publishers. It is thus in everybody's interest for profit margins to be kept at a reasonable and sustainable level. We urge publishers to act on the recommendations of this Report to address these issues. (Paragraph 54)

18. Government invests a significant amount of money in scientific research, the outputs of which are expressed in terms of journal articles. It is accountable for this expenditure to the public. We were dismayed that the Government showed so little concern about where public money ended up. (Paragraph 55)

19. We recommend that the Joint Information Systems Committee ensure that provision for continuing access in the event of cancellation to articles published during the subscription period is written into its next national licensing deal. (Paragraph 61)

20. Increasing usage rates do not equate to an increased ability for libraries to pay for journal bundles. The recent availability of usage statistics should not be used as a justification for publishers to raise their prices. (Paragraph 66)

21. Although libraries may aspire to provide access to every scientific journal, they cannot afford to do this. It is inevitable that difficult choices between a number of journals with lower usage rates and impact factors will have to be made. Nonetheless, these decisions should be made in response to local user needs rather than as a side effect of bundling. (Paragraph 67)

22. Current levels of flexibility within the journal bundle do not present libraries with value for money. Whilst we accept that unbundling STM information carries risks for the main commercial publishers, only when flexible bundled deals are made available will libraries achieve value for money on their subscriptions. Furthermore, although we recognise that bundled deals may be advantageous to libraries in certain circumstances, we are concerned about the potential impact bundling may have on competition, given limited library budgets and sustained STM journal price growth. (Paragraph 68)

23. Publishers should publicly acknowledge the contribution of unpaid peer reviewers to the publishing process. We recommend that they provide modest financial rewards to the departments in which the reviewers are based. These rewards could be fed back into the system, helping to fund seminars or further research. (Paragraph 70)

24. We do not doubt the central importance of peer review to the STM publishing process. Nonetheless, we note a tendency for publishers to inflate the cost to them of peer review in order to justify charging high prices. This lack of transparency about actual costs hampers informed debate about scientific publishing. (Paragraph 76)

25. We applaud the development by publishers of new technologies for digital journals. Innovative products such as ScienceDirect have brought increased functionality to researchers and users, making journals a more valuable research tool. (Paragraph 78)

26. We are persuaded that the costs to publishers associated with digitisation will reduce over time. Consequently, we would no longer expect these costs to be used as a justification for steep increases in prices. In the meantime we are concerned that financially powerful STM publishers may be using their strength during this digital transition period to make excessive profits whilst the going is good (Paragraph 79)

27. We believe that publishers should make it clear to subscribers what services and costs are and are not covered by the overall subscription price, enabling libraries and other users to weigh up the costs and benefits of taking out the subscription. We urge the Joint Information Systems Committee and other buying bodies to press for greater transparency in this area. (Paragraph 80)

28. Like the Office of Fair Trading, we are not entirely convinced by the cost–justification argument employed by publishers to explain rising prices. Publishers undoubtedly add value to the scientific process, but they also profit from it. (Paragraph 83)

29. It is not enough for the Government departments involved to declare themselves to be aware of the problems surrounding the imposition of VAT on digital, but not print, publications. As the issue is so critical to the adequate provision of scientific publications and to reaping the full anticipated benefits from digitisation, we recommend that DTI, DfES and DCMS all make a strong case to HM Customs and Excise for a change to the existing VAT regime. (Paragraph 86)

30. We recommend that HM Customs and Excise make strong and immediate representations within the European Commission to bring about the introduction of a zero rate VAT relief for digital journals, in line with the zero rate currently charged on print journals. (Paragraph 88)

31. We recommend that HM Customs and Excise exempt libraries from the VAT currently payable on digital publications whilst it negotiates for a more permanent solution within the EU. (Paragraph 89)

32. Because library budgets generally have a fixed ceiling, by increasing prices, the publisher with the largest share of the budget can gain an even greater share and may also force other publishers out of the budget altogether. (Paragraph 93)

33. We recommend that the Government Response to this Report provides information on the measures being taken by the Office of Fair Trading to monitor the market for STM journals. We urge the Office of Fair Trading to commit to biennial public reporting on the state of the market, including how STM publication prices are developing; how prices change following mergers and acquisitions in the sector and the impact of bundling deals upon competition. (Paragraph 94)

34. We agree that universities should be able to allocate their budgets locally in response to the needs of their teaching and research communities. (Paragraph 96)

35. It is unacceptable that HEFCE has shown so little interest in library budgets. We recommend that it commission a study from HEPI to ascertain both current library funding levels and library funding needs. The results of this study could be used to inform the allocation of the block grant. (Paragraph 97)

36. HEFCE has a valuable role to play in advising universities on library funding requirements. We recommend that HEFCE establish a code of good practice for library funding that universities can draw upon when allocating their budgets. (Paragraph 98)

37. Pressure on library journal acquisitions budgets has resulted in cancelled subscriptions and has contributed to a decline in book purchasing. This compromises the library's ability to provide the full range of services required by its user community. (Paragraph 99)

38. There is undoubtedly some scope for libraries to make efficiency savings, as there is for most organisations. Nonetheless, the valuable services provided by the library are expensive and staff–intensive. It is unlikely that libraries will have more to spend on acquisitions until they see an increase in budgets. (Paragraph 101)

39. Whilst we accept that it is important that libraries are responsive to local needs, opting out of national licensing deals negotiated with those needs in mind only makes the situation faced by libraries worse. (Paragraph 104)

40. We recommend that the Joint Information Systems Committee negotiate with libraries, regional purchasing consortia and other national bodies responsible for procurement to agree a common strategy. Only by combining their resources will they be able to negotiate a licensing deal that secures national support and brings real benefits. (Paragraph 105)

41. It is disappointing that many academics are content to ignore the significant difficulties faced by libraries. Until they start to see the provision of journals as, in part, their problem, the situation will not improve. (Paragraph 107)

42. Elsevier is no sudden convert to Open Access. The company has seen the direction of trends in publishing and has acted accordingly to minimise criticism of its current policies. We are in little doubt that Elsevier timed the announcement of its new policy on self–archiving to pre–empt the publication of this Report. It is good news that our inquiry has prompted such a high profile endorsement of increased access to research papers. Nonetheless, there are a number of serious constraints to self–archiving in the model proposed by Elsevier. (Paragraph 112)

43. Institutions need an incentive to set up repositories. We recommend that the requirement for universities to disseminate their research as widely as possible be written into their charters. In addition, SHERPA should be funded by DfES to allow it to make grants available to all research institutions for the establishment and maintenance of repositories. (Paragraph 115)

44. Academic authors currently lack sufficient motivation to self–archive in institutional repositories. We recommend that the Research Councils and other Government funders mandate their funded researchers to deposit a copy of all their articles in their institution's repository within one month of publication or a reasonable period to be agreed following publication, as a condition of their research grant. An exception would need to be made for research findings that are deemed to be commercially sensitive. (Paragraph 117)

45. We recommend that institutional repositories are able to accept charitably- and privately–funded research articles from authors within the institution, providing that the funder has given their consent for the author to self–archive in this way. (Paragraph 118)

46. We recommend that DCMS provide adequate funds for the British Library to establish and maintain a central online repository for all UK research articles that are not housed in other institutional repositories. (Paragraph 118)

47. Institutional repositories should accept for archiving articles based on negative results, even when publication of the article in a journal is unlikely. This accumulated body of material would be a useful resource for the scientific community. It could help to prevent duplication of research and, particularly in the field of clinical research, would be in the public interest. Articles containing negative findings should be stored within a dedicated section of the repository to distinguish them from other articles. (Paragraph 118)

48. In order for institutional repositories to achieve maximum effectiveness, Government must adopt a joined–up approach. DTI, OST, DfES and DCMS should work together to create a strategy for the implementation of institutional repositories, with clearly defined aims and a realistic timetable. (Paragraph 120)

49. A greater degree of consistency is desirable in copyright agreements, from publishers, but also from Government, institutions and academics, who have the power to influence the terms on which copyright agreements are established. (Paragraph 121)

50. The issue of copyright is crucial to the success of self–archiving. We recommend that, as part of its strategy for the implementation of institutional repositories, Government ascertain what impact a UK–based policy of author copyright retention would have on UK authors. Providing that it can be established that such a policy would not have a disproportionately negative impact, Research Councils and other Government funders should mandate their funded researchers to retain the copyright on their research articles, licensing it to publishers for the purposes of publication. The Government would also need to be active in raising the issue of copyright at an international level. (Paragraph 126)

51. We recommend that higher education institutions are funded to enable them to assume control of copyright arising from their research. In order to carry out this function they will need in–house expertise and dedicated staff. (Paragraph 127)

52. The cost to the taxpayer of establishing and maintaining an infrastructure of institutional repositories across UK higher education would be minimal, particularly in proportion to the current total UK higher education spend. When the cost is weighed against the benefits they would bring, institutional repositories plainly represent value for money. (Paragraph 130)

53. Having taken the step of funding and supporting institutional repositories, the UK Government would need to become an advocate for them at a global level. If all countries archived their research findings in this way, access to scientific publications would increase dramatically. We see this as a great opportunity for the UK to lead the way in broadening access to publicly–funded research findings and making available software tools and resources for accomplishing this work. (Paragraph 131)

54. Peer review is a key element in the publishing process and should be a pillar of institutional repositories. We recommend that SHERPA agree a "kite mark" with publishers that can be used to denote articles that have been published in a peer–reviewed journal. Upon publication, articles in repositories should be allocated the kitemark and marked with the date and journal of publication by the staff member

responsible for populating the repository. Authors depositing articles in institutional repositories should also be required to declare their funding sources in order to reduce the risk of conflicts of interest occurring. (Paragraph 135)

55. We recommend that the Government appoints and funds a central body, based on SHERPA, to co–ordinate the implementation of a network of institutional repositories. (Paragraph 136)

56. A Government–established central body would play a major role in implementing technical standards across institutional repositories to ensure maximum functionality and interoperability. (Paragraph 137)

57. We recommend that DTI works with UK publishers to establish how the industry might evolve in an environment where other business models flourished alongside the subscriber–pays model. Government also needs to become an intelligent procurer, outsourcing some of the technical work involved in establishing and maintaining institutional repositories to publishers who already have the relevant infrastructure and expertise in place. (Paragraph 140)

58. We see institutional repositories as operating alongside the publishing industry. In the immediate term they will enable readers to gain free access to journal articles whilst the publishing industry experiments with new publishing models, such as the author–pays model. (Paragraph 143)

59. For the Government either to endorse or dismiss the new publishing model would be too simplistic. Without any Government action, some authors are already choosing to publish in journals that use author payments to recover costs. Author–pays publishing is a phenomenon that has already arrived: it is for the Government and others to decide how best to respond. (Paragraph 144)

60. The evidence produced so far suggests that the author–pays model could be viable. We recommend that Government mobilise the different interest groups to support a comprehensive independent study into the costs associated with author–pays publishing. The study could be used to inform Government policy and strategy. (Paragraph 150)

61. Encouraging a public that is more scientifically literate and assisting women in their pursuit of successful careers in scientific research have been two of the Committee's longstanding concerns. We support, in principle, any measure that seeks to further these aims. (Paragraph 156)

62. Although early indications are positive, it is too early to assess the impact that author–pays publishing has had on access to scientific publications. (Paragraph 159)

63. The author–pays publishing model would be extremely advantageous to researchers in developing countries, enabling them to keep abreast of research conducted elsewhere. Financially, author charges would be less burdensome to researchers in the developing world than current subscription rates. If the author–pays model were to prevail, publishers, Government agencies and other donors would need to adapt

existing schemes, such as HINARI, AGORA and INASP–PERI, to meet the demands of the altered cost recovery model. (Paragraph 162)

64. We recommend that the Research Councils each establish a fund to which their funded researchers can apply should they wish to publish their articles using the author–pays model. The Research Councils will need to be funded by OST to take account of this increase in costs. We hope that industry, charity and other Government funders will consider similar measures. (Paragraph 165)

65. Research Councils for disciplines that require only limited funding should be funded to enable them to pay for publication costs where necessary. (Paragraph 166)

66. In order to succeed, most author–pays publishers, like everyone else, will have to publish articles of a high quality. It is not, therefore, within the interest of journals at the higher end of the market to lessen the rigour of peer review. Nonetheless, there is a risk that lower quality journals might seek to reduce their quality threshold in order to generate profit. Were the author–pays publishing model to prevail it would be vital to ensure that peer review was not compromised in order to retain confidence in the integrity of the publishing process. (Paragraph 172)

67. The introduction of a submission fee would be an important step towards ensuring the quality of scientific publications and we strongly recommend that author–pays publishers introduce this system. (Paragraph 174)

68. The commercial and industrial sectors currently contribute significant funds to the publishing process through payments for journal subscriptions. Much of this money would be lost to the system if an author–pays model were to prevail. This is one of the key issues that needs to be addressed before the wholescale transition to an author–pays model can be supported. Government, publishers and industry need to work together to identify a solution to this problem in order to avoid a disproportionate increase in the amount of money that Government invests directly or indirectly in the publishing process. (Paragraph 177)

69. Learned societies are greatly valued by the academic and wider research community. It is of concern to us that learned societies could stand to lose a substantial portion of their income in a move to the author–pays publishing model. This is another key issue that proponents of the author–pays model need to address. (Paragraph 180)

70. We strongly support further experimentation with the author–pays publishing model. In the short term Government may need to provide limited financial assistance to encourage publishers and institutions to take part in what, for them, may be an expensive process. We applaud the Joint Information Systems Committee for providing funding for this purpose so far and hope that it will continue to do so. (Paragraph 184)

71. Author–pays publishing is a growing phenomenon. Its implementation on any scale will have important consequences for current funding structures and the UK publishing industry. So far the Government has shown little inclination to address this issue. (Paragraph 185)

72. Government has not shown much evidence of a joined–up approach to the challenges posed by changes to the model for scientific publishing. Whilst the central departments have been slow to respond to the author–pays publishing model, at least two Government–funded bodies have given public support to it. This creates unnecessary confusion. We recommend that it formulate a coherent strategy as a matter of urgency. (Paragraph 186)

73. We are satisfied that, by scaling publication with research costs, the author–pays publishing model would ensure a fairer global distribution of the costs of publishing research findings. (Paragraph 188)

74. The UK would put itself at a financial disadvantage internationally if it were to act alone in mandating publicly–funded researchers to publish in author–pays journals. (Paragraph 189)

75. Institutional repositories should be a key component of any long–term strategy to ensure the preservation of digital publications. (Paragraph 193)

76. The British Library has a crucial role to play in the preservation of digital publications, both strategically and practically. This is an expensive process. Whilst the publication of this Report is too late to have any influence on funding decisions made as part of the 2004 Spending Review, we strongly support the British Library's call for extra funding in recognition of the work that it has carried out in this capacity. Failure of the Government to give adequate funding to the British Library could result in the loss of a substantial proportion of the UK's scientific record. (Paragraph 196)

77. It is vital that work on regulations for the legal deposit of non–print publications begins as soon as possible. We cannot understand why DCMS has not yet established the Legal Deposit Advisory Panel. We recommend that they appoint the panel and begin preliminary work on the regulations at official level immediately. (Paragraph 199)

78. We recommend that the first task of the Advisory Panel is to establish definitions of a digital publication and a UK publication that are flexible enough to capture material from a range of sources in a range of formats. (Paragraph 200)

79. The existence of a secure network between the legal deposit libraries would create greater efficiencies in the deposit system and would have the potential to increase access to deposited material. We recommend that provisions for such a network are made in the regulations with these two aims in mind. The deposit libraries should be funded to establish the network. (Paragraph 201)

80. We recommend that the regulations make provision for the deposit libraries to deliver digital articles remotely to desktops on the same payment basis as Document Supply. (Paragraph 202)

81. Gaps of up to 60% in the deposit of electronically–delivered publications, including STM journals, represent a significant breach in the intellectual record. It is imperative that work on recovering and purchasing the missing items begins

immediately. The six deposit libraries will need additional funding to do this. (Paragraph 203)

82. As is the case with any process, peer review is not an infallible system and to a large extent depends on the integrity and competence of the people involved and the degree of editorial oversight and quality assurance of the peer review process itself. Nonetheless we are satisfied that publishers are taking reasonable measures to main high standards of peer review. (Paragraph 207)

Formal Minutes

Wednesday 7 July 2004

Members Present

Dr Ian Gibson, in the Chair

Paul Farrelly	Mr Robert Key
Dr Evan Harris	Mr Tony McWalter
Dr Brian Iddon	Dr Desmond Turner

The Committee deliberated.

Draft Report (Scientific Publications), proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 220 read and agreed to.

Resolved, That the Report be the Tenth Report of the Committee to the House.

Ordered, That the Chairman do make the Report to the House.

Ordered, That the Appendices to the Minutes of Evidence taken before the Committee be reported to the House.

Ordered, That the provisions of Standing Order No. 134 (Select Committees (reports)) be applied to the Report.

[Adjourned till Monday 12 July at Four O'Clock.

Witnesses

Monday 1 March 2004

Page

Mr Robert Campbell, President, Blackwell Publishing, **Mr Richard Charkin,** Nature Publishing Group, Macmillan Limited, and **Dr John Jarvis**, Senior Vice President, Europe, Managing Director, Wiley Europe Limited Ev 1

Mr Crispin Davis, Chief Executive Officer, and **Mr Arie Jongejan**, Chief Executive Officer, Science and Technology, Reed Elsevier Ev 9

Monday 8 March 2004

Dr Julia King, Chief Executive, Institute of Physics (IoP), **Mrs Sally Morris**, Chief Executive, Association of Learned and Professional Society Publishers (ALPSP), and **Mr Martin Richardson**, Managing Director, Journals Division, Oxford University Press (OUP) Ev 14

Dr Nigel Goddard, Principal Investigator, Axiope Project, **Mr Vitek Tracz**, Chairman, Current Science Group, BioMed Central, and **Dr Harold E Varmus**, President and CEO, Public Library of Science (PLoS) Ev 21

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