

THE DANISH EXPERIENCE OF THE HOUGHTON STUDIES: COSTS AND BENEFITS OF ALTERNATIVE PUBLISHING MODELS

Mikkel Christoffersen

Introduction

This short article is by no means a comprehensive guide to the so-called Houghton reports. Interested readers can themselves consult the reports for the UK, the Netherlands and Denmark as well as the summaries and the comparative report.¹ Having been involved in some of the preparations, I wanted instead to touch upon some of the aspects of the reports that have seemed to cause the most interest from readers with special emphasis on the Danish report.

Background

In the spring of 2009, the Knowledge Exchange programme (KE) decided to commission reports for the rest of its member countries from Australian professor John Houghton along the lines of his report “Economic Implications of Alternative Scholarly Publishing Models: Exploring the costs and benefits” for the United Kingdom from earlier that year. Germany is rather a special case due to a unique, national licensing model for scientific journals, but The Netherlands and Denmark are comparable to the UK, and so it was mostly a matter of getting the statistical data and feeding it to the intricate model that Houghton and his team have developed.

In Denmark, an ad hoc working group consisting of representatives from KE, the Danish Electronic Research Library (DEFF), the Agency for Library and Media as well as other relevant agencies, Copenhagen University Library Information Center (CULIS), the publishing house Museum Tusulanum and others was set up to provide statistics and data that were not readily available from the Agency for Library and Media or national statistics bureaus. The Houghton model consists of a myriad of diverse variables, and as always: the better the input, the more valid and reliable the output.

Assumptions

In my experience, the fundamental logic of the study is not easy to convey to outsiders. I believe that two factors determine this. First, the special history and nature of scientific publishing is counter-intuitive to most people. Second, economic cost-benefit analysis may sometimes appear very speculative bordering on black magic. The reason for this is the benefit part. Costs are usually more straightforward, because they're

present and tangible. Benefits are usually potential, intangible and abstract.

For our purposes here, the Houghton study posits three major entities; research, publishing and society. Research is beneficial to society, which is why society funds research but the returns on the investment depend on a host of factors. Simplified, the resource stream between society and research is a stream of funds from society to research and a stream of communication from research to society. Publishing is the way in which this communication is done and how research finds its way back to society, although there is an inbuilt delay in the possible effect. From the time the ink dries on a scientific paper until its conclusions have been acknowledged, operationalised and implemented in the target area, there is a time span ranging from ‘some time’ to ‘never.’

It stands to reason that the better the research communication the better the returns for society. Hence, any obstacle to communication constitutes a loss for society. There are different kinds of losses. For example, research communication can be lacking or of low quality, it can be difficult or impossible to find or access can be restricted. The latter factor is the true cost of commercial scientific publishing as we know it. We are in fact paying for this restriction and whereas these payments may seem large - and indeed not only are they large, they are always increasing beyond the budgets of libraries - the indirect cost to society is even larger because of the basic impediment to the flow of knowledge.

Method and benefits

In order to investigate the impact of other publishing models than the one we know, the study operates with three alternatives; a self-archiving solution, a self-archiving solution with overlay services and an author-pays model. We normally refer to self-archiving solutions as green Open Access, and it denotes models in which authors retain the right to publish their papers on their own web-sites and to archive them in institutional repositories. Author-pays models are usually called golden Open Access. There seems to be a call in the community to rename this solution ‘publication fee’ rather than ‘author-pays’ for mostly psychological reasons; it may scare authors who mistakenly believe they now have to pay themselves,

¹ Sources are given at the end of the article.

whereas in reality it is the home institution which pays. Publishing costs money, but rather than publishers securing revenue by way of subscriptions, they would now secure revenues by way of putting fees on receiving papers for publication, so author-pays simply means that it costs money to publish but not to read. In theory, it makes little difference for a university whether it has to pay to publish or to read, but when it pays to publish, the information becomes free for all, and that makes a gigantic difference.

The costs are tabulated for these alternatives and compared to the status quo yielding net costs. Of course, costs can be negative constituting savings. It also makes quite a difference if the models include physical deliveries or are online-only. Sometimes the difference in costs are larger between print and online internal to the models than any external differences between models. However, the nonchalant term 'status quo' represents a huge challenge, because what are in fact the total costs related to the production and consumption of scientific literature? Strictly speaking, such things as the electricity that computers consume while someone uses them to search for or read literature and the ink cartridges that laser printers eat through while they spew out articles are all costs associated with this. With an army of various costs, some change with publication models and some do not. For total costs of the status quo, see below.

Still, the cost side is the easy one. The benefit side is difficult. What are the benefits to society from research and how should this be quantified? John Houghton and team make use of the so-called Solow-Swan model, which is a generic model for exogenous growth - i.e. dealing with factors coming from outside and opposed to the pure endogenous variables 'technology' and 'labour supply,' and which secured T.W. Swan the 1987 Nobel prize in economics. The model is refined in the study, because the Solow-Swan model assumes that research is unequivocally available and efficient (beneficial in an economic sense). It also assumes that knowledge is substitutable across domains but this is of less importance here. These assumptions are clearly wrong qua being too simplistic. In the Houghton model, availability and efficiency are introduced as friction variables instead; the more available and efficient knowledge is, the less friction there is - friction between new knowledge in its raw conceptualisation and its economic impact on society.

Based on earlier economic studies, 20% is chosen as the return from R&D investments by society over a 10-year period. This provides a base amount that can then be further refined by way of increasing or decreasing availability and efficiency. A 5% decrease of friction means an increase of benefits worth DKK 304

mio. annually for Denmark, out of which DKK 243 mio. accrue in the university sector. The savings can be converted into growth rates if made permanent.

This is the major part of the large amounts that have been thrown around in the ensuing debate and which has proven itself to be the most difficult to grasp by readers of the report. The large number for a small country like Denmark stems from the fact that large amounts are spent on research and therefore increased access to the produced knowledge will itself mean a large amount. It is not profits or savings that can be immediately tallied and spent, but social benefits in a broad sense.

Other factors

There are of course other factors at work. First of all, it makes a difference if Denmark should choose to go Open Access unilaterally or whether it would be a global phenomenon; the more global the better. Denmark accounts for about 1% of the world's scholarly output, and so it makes only a little difference if all that output became Open Access overnight as compared to a global phenomenon. Of course, the direct costs of reading by Danish researchers were estimated to be DKK 16 bn. in 2007, and so once again even small changes to numbers this large can make a difference - even more so when it is considered that the output would be freely available to the whole world and so impact all countries' R&D expenditures.

Second, there are various systems costs and savings associated with the status quo and with new models. Going Open Access by way of the green model, i.e. based on self-archiving, means net systems savings in terms of production, and these are in fact funds that would be directly available, *if* Open Access becomes a global phenomenon, *but not* if Denmark does it unilaterally. The savings obtained in the research production phase by free access to papers produced in Denmark are not enough to offset the costs of operating repositories. So there are net costs, and whereas the benefits are the same yielding a net benefit increase, strategically speaking it is a much tougher sale to decision makers that models are showing huge benefits but at net costs. It is not realistic, though, to consider the rest of the world as exclusively toll access, so the net costs should be offset. In a global model, the research production savings are estimated at DKK 214 mio. and so more than enough to offset the mere DKK 12 mio. costs of repositories. The golden route on the other hand is showing clear net savings in all scenarios.

Third, it makes a difference if two steady state models are considered; one for the present situation and one for the end result of a change, say green Open Access.

Realistically a transitional period must be heavily factored into the equation. Golden Open Access is so beneficial that the net savings are enough to cover the costs of the transition. This means that full Open Access could be achieved within the confines of existing budgets. However, this model requires a lot more widespread and fundamental changes, many of which are way outside the control of funding bodies, universities and libraries. The green model's increased social benefits can easily finance a transitional phase as well, but its net savings cannot. This logically means that society needs to translate its increased benefits into cash funding during the transition.

Comparison across KE countries

We are still waiting for the German report, but the UK, The Netherlands and Denmark are interesting cases to compare, because they represent a large, medium and small country respectively. The major finding when comparing the cases is a striking similarity across the results.

Benefits for the countries are estimated at EUR 250 mio. for the UK, EUR 78 mio. for The Netherlands, and EUR 40 mio. for Denmark in the same manner as delineated above. In a global golden Open Access scenario, system savings are estimated at EUR 480 mio. for the UK, EUR 133 mio. for The Netherlands, and EUR 70 mio. for Denmark. In a global green Open Access scenario system savings are estimated at EUR 125 mio. for the UK, EUR 50 mio. for The Netherlands, and EUR 30 mio. for Denmark. In the latter case, the Netherlands cannot quite secure the same relative savings as the UK, which in turn cannot quite secure the relative savings of Denmark. This is due to green Open Access being very dependent on repository structures, and the way the three countries have set up academic institutions and the way the institutions have set up repositories mean that Denmark have relatively fewer and larger repositories with less overhead as a result.

Critique

Based on comments from mainly commercial publishers and anecdotal evidence from colleagues, here is a short list of the major critique points. First, though, it should be borne in mind that these are not normative studies or moral guidelines. The Houghton reports are quite simply attempts to quantify the economic cost-benefit factors involved in academic publishing. The authors do not take sides nor do they tell us what we should or should not do.

In Denmark, the major complaint has been that green Open Access will lead to subscription cancellations, whereas it is assumed in the model that it will not. According to the Houghton team there is nothing in the literature to suggest cancellations, but critics believe that practice is a different matter.

Apart from this, a major mistake often repeated is that peer review will be undermined by Open Access initiatives and lead to a poorer quality of papers and that there are already author-pays options available but uptake has been slow. These are well-known arguments from the overall Open Access debate, and the standard replies apply again. There is nothing to prevent peer review in neither green nor golden Open Access. The costs of peer review are worked into the Houghton models. While it is true that there are presently some opportunities for author-pays and uptake has been slow, there is as yet no systematic institution-backed approach to it as assumed by the study in its future steady state models and so it is in fact remarkable that the option is even used at all.²

Conclusion and future development

KE arranged a workshop in Brussels in June 2009 with the participation of the European Commission and other European bodies. This event was a chance for stakeholders of various kinds to present their understanding of the findings and for the represented bodies to discuss how to move on from there. In Denmark, the report did not quite have the public impact one could have envisioned due to its startling conclusions. We believe it may be caused by the rather dense subject matter and the complexity of academic publishing in particular and cost-benefit analysis in general. However, the report has had some real impact in the sector and among decision makers to the point where agencies and ministries have discovered the potential of Open Access. Knowledge Exchange, DEFF and the Nordbib programme have become the target of renewed interest. For Nordbib - and its partners and funded projects such as ScieCom Info - the timing could hardly have been better since negotiations over a continuation of the programme are underway right now.

The conclusion of the report is a startling one. It is clear that there are various savings to be made in the different models and dependent on a lot of factors. British RIN has also made a study that delves into the cost side of things, but the true eye-opener of the Houghton reports and the most controversial one if followed to its ultimate conclusion, is the notion that the true cost of toll access is not the cash needed to buy the information back, but the very fact of restricting access to knowledge thereby preventing research results from having their potential social impact on society.

² For many more questions and answers please see the JISC document listed at the end of the article.

Sources:

The UK report containing the full explanation of the assumptions, models and formulae of the study as well as the Dutch and the Danish reports can found here along with the comparative report
<http://www.knowledge-exchange.info/Default.aspx?ID=316>

A summary of the UK report
<http://www.jisc.ac.uk/publications/documents/economicpublishingmodelssummary.aspx>

A summary of the Dutch report (in Dutch)
[http://www.surffoundation.nl/SiteCollectionDocuments/Sa
 menvatting_Costs%20of%20Benefits%20of%20Research%20Communication.pdf](http://www.surffoundation.nl/SiteCollectionDocuments/Sa%20men%20vatting%20Costs%20of%20Benefits%20of%20Research%20Communication.pdf)

A summary of the Danish report (in Danish)
http://www.bibliotekogmedier.dk/fileadmin/user_upload/dokumenter/servicemenu/Presse/Opsummering_Houghton_report.pdf

Critique from publishers and JISC answers
<http://www.jisc.ac.uk/media/documents/publications/responseonciaspmpreport.pdf>

A variety of documents associated with the RIN report as well as the report itself can be found here
<http://www.rin.ac.uk/our-work/communicating-and-disseminating-research/activities-costs-and-funding-flows-scholarly-commu>



Mikkel Christoffersen Nordbib programme manager