

## OPEN ACCESS IN DENMARK

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### Abstract

*Open Access is gaining momentum in Denmark – not only among libraries but also among the research community and at the political level. Open Access journals exist and the number will grow, self archiving has been established among some institutions and there is ongoing work on a preservation infrastructure. One of the most advanced areas in this aspect is astronomy and the role of Open Access in this area is described from a Danish perspective.*

### Introduction:

Autumn 2003 – almost 100 people attend a one-day conference in Århus with the theme Open Access and Institutional Repositories. All are quite enthusiastic, but by the end of the day, very little happened. Awareness of the possibilities was given and some of the obstacles were discussed. There was focus on the problems with researchers signing away their copyright and talk about models for not doing so. There was a general agreement, that the way to go would be to involve the trade unions. A year later some still talked but the general impression was, that the old fashioned peer reviewed journals were the way to recognition, grants and impact.

Autumn 2007 – more than 80 people attend an Open Access seminar organized by the Copenhagen University Library, and The Royal Library. The lectures are all build around practical examples – many being in production rather than projects. Many scientists publish in OA journals and many institutions support self archiving. Models exist and the challenge is to create more momentum on the Danish scene, to stimulate the interest at the political level and to ensure that, once the organizational problems are solved, the technology will be in place.

There are four years between the two stories – four years which slowly, but steadily has changed the general perception of Open Access (OA). Today OA journals are accepted by large parts of the research community as “proper” journals. This is best illustrated by the present process among academia of creating lists of journals, which are considered relevant for biometric evaluation.

Also the general attitude to Open Access publishing is changing – slowly. The best example is the new publication policy adopted by the Research Council

for Culture and Communication. In order to obtain support in the future, journals must commit themselves to give online, free access after an embargo period.

The active support for international initiatives is still low. The Danish Library Agency has as the only organization in Denmark joined SCOAP3 and only two libraries, The Royal Library and Roskilde, have signed the Berlin declaration.

But despite the organizational level support is relatively small many individual researchers support the Open Access model through their use of e.g. preprint archives.

The Danish approach to OA can therefore be seen as following three parallel roads:

- Raise awareness and take actions on a political and organizational level
- Establish OA journals and encourage self archiving
- Through active use of and participation in international activities

The remaining part of this article will provide the more comprehensive description of the activities. It will follow the outline in the above three points. The latter is illustrated through a specific case, namely astronomy, which nationally and internationally is a very active field.

### Activities on the political and organizational level

The main push has been, and still is, coming from the library sector, but interestingly enough other sectors now start to address the issue.

An important initiative is the decision by the Research Council for Culture and Communication that it will adopt a different strategy towards application from groups, who want to publish a journal. In the future, they will require that the articles in the journal become available online and for free after a certain embargo period.

This initiative is very important, as many journals published in Denmark are within the areas covered by this research council. It will imply, that it is hard to

imagine, that any traditional journals will exist say in 2012. The decision has caused some public debate about the consequence for publishers in “narrow” fields.

To raise awareness Dorch (2007) maintains a blog on Open Access. This initiative may now be carried over into a national initiative with potentially more bloggers.

Mathiesen and Elbæk (2008) have produced an OA-roadmap for the Danish Electronic Research Library (DEFF) Information Supply Program Committee. In this roadmap they present an overview of activities on a national and international scale and they point to proposed activities, which might be addressed as part of the Danish initiative. The idea is that the roadmap will be used by DEFF to initiate activities, which will further increase the uptake of Open Access.

### Establish OA journals and encourage self archiving

Many journals now exist in Open Access form. According to numbers published by Burchardt (2007) 163 journals were Open Access whereas 438 were not. Among Open Access journals are some very important journals like “Ugeskrift for læge” and “Ingenøren” – to mention some of the early adopters.

As already mentioned, the research council for Culture and Communication has adopted a new policy in favor of Open Access publishing. At the same time, several libraries have experimented with OJS, a Canadian Open Source Journal system. The choice was a result of a DEFF supported activity to evaluate different applications to support the production of peer reviewed online journals.

An example of local initiative is that the University of Aarhus has initiated an initiative where they will convert all traditional journals to online journals. The State and University Library has been asked to provide the service and is presently running a pilot project. This project has benefitted from advice from one of the first libraries to start Open Access publishing in Denmark, Copenhagen Business School (CBS).

CBS started their service in 2003, and since the start the number of downloads have really exploded. In 2004 there was almost 16.000 downloads compared to almost 233.000 last year. In 2007 there were more downloads in every month than the total in 2004.

An often overlooked, but still very important part of Open Access publishing is “permanent access”, i.e. that the articles can be accessed now and in the future. In Denmark this issue is being addressed by the two national libraries, The Royal Library and the State and University Library. They have initiated a project, PINDAR, which is supported by the Danish Electronic Research Library (DEFF), that creates a preservation infrastructure. The idea is to see self

archiving (and later OA publishing) as a process and have digital preservation as an integrated part of this flow. Concrete work is on developing services, which will check files as they are ingested into the archive system. Subsequently the files with relevant preservation information will be transferred to a national trusted repository.

### Case: Astronomy

While it is a logical assumption that Open Access, due to increased visibility and accessibility, leads to increased readings and citations of an individual electronic publication, this assumption must be verified by observation in order to be used as a valid argument in any scientific context. Hence when arguing for the case of Open Access, the field of astronomy and astrophysics is often used as an example of success, because this field provides a large dataset regarding the use of Open Access, cf. Kaiser (2006): For astronomy, the existence of arXiv.org, an Open Access repository for preprint self-archiving that predates the World Wide Web, provides a long time record of publication and citation patterns dating from April 1992 onwards.

A frequent argument favoring Open Access is that the publication pattern of astronomy demonstrates that the Open Access “citation advantage” results in an Open Access publication receiving twice the number of citations of a non-Open Access publication. However, as we describe in this article, the situation is more complex and astronomy may constitute a special case.

### Open Access Astronomy

For most astronomers, the main source of new and recent literature is without doubt arXiv.org’s astrophysics category “astro-ph” and NASA’s Astrophysics Data System, called ADS (cf. Kurtz *et al.* 2000). arXiv.org is the natural science preprints server, currently hosted by Cornell University Library, and ADS is a free bibliographical database that contains nearly 5 million bibliographical records from various astronomical series and monographic publications, including theses and user added content: From 1995 the completeness of ADS records from journals is approximately 100 per cent. Records in ADS link to the publisher’s electronic full text version of most entries, and all journals papers. Since March 2005 ADS contains also links to the corresponding self-archived version in arXiv.org, cf. Henneken *et al.* (2007). I.e. if one searches in ADS and finds a paper to which there is restricted access through the link to the publisher’s version, it is possible to use the Open Access preprint or reprint version in arXiv.org instead. Additionally, in many subfields of astronomy any self-respecting scientist or research group daily ploughs through the most recent batch of astrophysics abstracts

– by using either astro-ph’s mailing list, an RSS feed, or the myADS individually setup “virtual journal” from NASA ADS [5]. E.g. at the DARK Cosmology Center in Copenhagen, scientists daily take turns in presenting papers from astro-ph to one another.

Several studies report an Open Access citation advantage of about a factor of two for astronomy papers deposited in astro-ph on arXiv.org, e.g. Schwarz & Kennicutt Jr (2004):

*“On average, ApJ [Astrophysical Journal] papers posted on astro-ph are cited more than twice as often as those that are not posted on astro-ph.”*

Other similar results were found by Lawrence (2001), Henneken *et al.* (2006), Metcalfe (2005) and Metcalfe (2006). However, the most recent study by Kurtz & Henneken (2007) finds that for one journal, *The Astrophysical Journal*, which was studied also by Schwarz & Kennicutt Jr (2004) and Henneken *et al.* (2006) there is in fact no Open Access citation advantage associated with depositing papers in arXiv.org. They demonstrate that the previously found positive result can be explained by the timing of deposited papers alone. Harnad (2006) explains the result of Kurtz & Henneken (2007) by noting that “*all active, publishing researchers already have online access to all relevant journal articles*”, i.e. that astronomy constitutes a very special case, in this respect.

### Astronomical core journals

A statement such as the one below is not uncommon among astronomers:

*“I don’t know too much about the university library system here. With the age of online journals, I can get most of my info through the web.”* (Except from a private email, the author of which is known to the editor)

The sentence demonstrates both a success and a failure of the communication between research libraries and their customers. However, it also support the conclusion by Harnad (2006), that in practice all astronomers have full online access to all relevant journal articles via institutional subscriptions, and that all astronomical journals are electronic and online. Because astronomy has only a small closed circle of core journals, this situation is affordable to most institutions. As an example, while the Danish Royal Library provides access to more than 50 online astronomy journals, the core of astronomy journals consists of only a handful of journals, including the three main European, US and British journals, cf. Henneken *et al.* (2006; 2007). As a side effect self-archiving has had no detectable effect on subscriptions or cancellations.

Many or most astronomy articles are self-archived in arXiv.org as preprints prior to peer-review and publication, but usage and citations shift to the published version when post-print becomes available.

Hence, the Open Access citation advantage is partly an “Early Access advantage”, according to Harnad (2006), but there is also a “self-selection bias”, in that the best papers appear as preprints first, e.g. Kurtz & Henneken (2007).

Furthermore, back issues of the major core astronomy journals, older than circa three years, are free from approximately 1996 onward: With all post-prints easily accessible, the “Competitive advantage” of Open Access is restricted to the prepublication phase, cf. Harnad (2006).

### Summary

While astronomy might constitute a special case when it comes to implementation of Open Access in its publication pattern, there is no reason to believe that the landscape of Open Access, should not in fact be a landscape consisting of different subject specific islands. Natural science fields such as mathematics, biology, chemistry and physics have different scholarly communication traditions, as do the arts and humanities, and hence it is logical to assume that the same would be true when it comes to their respective implementation of Open Access.

As described, many initiatives are emerging in different areas. The first research council has adopted a policy which will stimulate conversion from traditional publishing models to open access models.

An Open Access roadmap for the activities in Denmark is being developed, which will be come with recommendations for library uptake and support to the research community in this area. It is important to have a common vision and a common strategy. However it should be remembered that we should not expect to easily extrapolate the reception of Open Access in a single “special case” to other special cases, and surprises are bound to arise, even in “old” Open Access fields: In 2007 a student deposited a project paper in arXiv.org, after it was accepted by an international journal (Bjørk 2007), and the instantly received world-wide media attention, cf. Baker (2007) thereby illustrating that even after 15 years of well established Open Access, there are still surprise effects of Open Access.

### References

- Baker, G. (2007) “Student activism: How students use the scholarly communication system,” *C&RL News* 68 (ARL), No. 10, November 2007
- Bjørk, R. (2007) “Exploring the Galaxy using space probes”, *International Journal of Astrobiology* 6, p. 89-93, arXiv:astro-ph/0701238
- Burchardt, J (2007) “Viden giver velstand” <http://www.videnssamfundet.dk/Hvidbog.pdf>, (visited March 12 2008)
- Dorch, Bertil (2007) <http://www.kb.dk/dal/kub/lopen-access/OA-blog.html> (visited March 12 2008)

- Harnad, S. (2006) "The special case of astronomy," *Open Access Archivangelism*, October 14. 2006
- Henneken, E., Kurtz, M.J., Eichhorn, G., Accomazzi, A., Grant, C.S., Thompson, D., Murray, S.S. (2006) "Effect of e-printing on citation rates in astronomy and physics," *Journal of Electronic Publishing* 9, p. 2, arXiv:cs/0604061
- Henneken, E., Kurtz, M.J., Eichhorn, G., Accomazzi, A., Grant, C.S., Thompson, D., Bohlen, E., Murray, S.S. (2006) "myADS-arXiv – a Tailor-Made, Open Access, Virtual Journal," in *Library and Information Services in Astronomy V* (eds. Sandra Ricketts, Christina Birdie and Eva Isaksson), *ASP Conference Series* 377, p. 106, arXiv:cs/0608027
- Henneken, E., Kurtz, M.J., Warner, S., Ginsparg, P., Eichhorn, G., Accomazzi, A., Grant, C.S., Thompson, D., Bohlen, E. & Murray, S.S. (2007) "E-prints and journal articles in astronomy: a productive co-existence," *Learned Publishing* 20, p. 16, arXiv:cs/0609126v1
- Kaiser, J. (2006) "Particle physicists want to expand Open Access", *Science* 313, page 1215
- Kurtz, M.J., Eichhorn, G., Accomazzi, A., Grant, C.S., Murray, S.S. & Watson, J.M. (2000) "The NASA Astrophysics Data System: Overview," *Astron. Astrophys. Suppl. Ser.* 143, 41, arXiv:astro-ph/0002104
- Kurtz, M.J. & Henneken, E. (2007) "Open Access does not increase citations for research articles from *The Astrophysics Journal*", arXiv:0709.0896v1
- Lawrence, S. (2001) "Free online availability substantially increases a paper's impact," *Nature* 411, p. 521
- Mathisen K and Elbæk, M (2008) "Overview of Open Access activities and projects (OA Road Map)" to be published
- Metcalfe, T.S. (2005) "The rise and citation impact of astro-ph in major journals," *Bull. Am. Astron. Soc.* 37, p. 555—557, arXiv:astro-ph/0503519v1
- Metcalfe, T.S. (2006) "The citation impact of digital preprints archives for solar physics papers," *Solar Physics* 239 (1-2), p. 549—553 (Springer), arXiv:astro-ph/0607079v2
- Schwarz, G.J. & Kenicutt Jr, R.C. (2004) "Demographic and citation trends in astrophysical journal papers and preprints," arXiv:astro-ph/0411275v1

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