

Towards a New System of Scholarly Communications

Leo Waaijers
Library, Delft University of Technology

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TOWARDS A NEW SYSTEM OF SCHOLARLY COMMUNICATIONS

Waaijers, Leo
[Delft University of Technology, Library,](#)
Delft, The Netherlands

To set up the scene I'd like to start with some parables.

The first parable is called: The Watch.

A man buys a watch in a jewellers, pays for it, walks out of the shop and a passer by asks him the time. The man tells him, of course. And then he feels the seller from the shop tapping him on the shoulder and saying: "You owe me a guilder." The man answers: "Guilder? What guilder?" Surprisingly, at least to him, the seller explains: "Well, you told someone the time, i.e. information you got from the watch. That information is still mine. I sold you the medium, not the message. You see, the more people you tell the time to, the less watches I will sell. So again, one guilder please." This whole situation of course is rather unlikely, because nobody owns the time and there is a lot of competition among watchsellers.

The name of the second parable is: The Scientific Journal.

A library has a subscription to a journal and saves the issues carefully. Then someone comes along and asks the library for a copy of an article. The library presents the person with a copy, doing all the necessary work to get him one. Then the publisher or someone representing him taps the librarian on his shoulder and says: "You owe me a guilder." The librarian answers: "I saved the journal, made the photocopy, forwarded it on and did the administration. What's your added value in this process?". He gets no answer to his question. Nevertheless the claim for the guilder remains. This time the whole situation can occur, and in fact does so, because the scientific information involved is proprietary to the publisher. The copyright is exclusively his and there is no competition on the market. In fact, there is no market.

The Electronic Scientific Journal, is the name of the third parable. It starts with a quotation from an editorial of the Earth and Planetary Science Letters, a journal issued by Elsevier Science Publishers. It says:

"EPLS Online is the electronic version of Earth and Planetary Science Letters and will be updated on a monthly basis, simultaneously with the publication of the hard copy journal. To begin with EPLS Online will be available exclusively

to individuals and only be available for those individuals whose library subscribes to the paper version of EPLS. For 1996 EPLS Online will be offered at an introductory rate of US\$ 39.00. This is a 50% reduction on the full 1996 price (US\$ 80.00)."

Compared to the price of the paper version of the 1996 volume of ESPL, which is Dfl 3.768,-, the price of the electronic version is really peanuts. So, for individual scientists it suddenly becomes quite interesting to have their own individual electronic subscription to this journal. It is very affordable indeed and always directly available on their desk. One might expect this new product to be successful, making the paper version a waste. But keeping the paper version is a *conditio sine qua non* for the availability of the electronic version. This makes the library hostage of its own scientists. At the end of the day the total remuneration payed by the university as a whole for this journal is a multiple of the original price.

The last parable goes back to a picture of Stefan Verwey and is called The Internet.

The picture shows an author and a publisher, separated by a manuscript. The author says: "If you don't think much of it, I'll throw it on the Internet." This simple picture is the most condense summary of the new dynamics caused by the Internet I have seen so far. With the Internet at hand the author feels no longer subject to the discretions of the publisher. From his side the publisher sees his guess confirmed that the Internet is a collection of junk ware. For the moment it is still too early to judge; both parties are working hard to be proved right. I'll bet for the author.

The current systems of scientific communication has some serious defects.

Fig 1. Current proprietary article flowchart

First. The system is slow. In general it takes far more than half a year before a submitted article is published. And if the article is rejected the whole process has to start all over again.

Second. The system is becoming unreliable. The classical process of refereeing is based upon unwritten standards of academic decency that condemn abuse of scientific competitive intelligence. A recent article in *De Volkskrant* - a national Dutch newspaper - quotes several well-reputed scholars to reveal that an ever higher performance pressure on scientists is eroding these standards. Authors sometimes find their submitted articles suspended or even rejected to surprisingly discover that the same idea is published in another journal and by another author. Serendipitous alterations of research programs by a project leader may strikingly concur with the receipt by him of new articles for refereeing.

Third. The system is unaffordable. Pondering on an author a publisher seems to say: "We'll make him an offer that he cannot refuse." That is, in exchange for publication the author has to assign his copyrights exclusively to his publisher. This Faustian bargain as it has been called by Stevan Harnad, creates a feudal condition of exclusive intellectual property by the publisher of the yield of scientific work, the published article. The outcome is a repetitive annual price increase of scientific journals which is a multiple of the general price index. The reported profits are correspondingly high.

"Pay or perish" has become the library's equivalent of the publish or perish syndrome. As library budgets cannot cope with these price increases, collection policy has become cancellation policy. University collections deteriorate much faster by price increases than by acidification. For the Delft central library we talk about 5% to 6% per year.

Ginsparg, Odlyzko, Harnad and other scientists champion a different approach of scientific communication already for some time. They base their pleas on the full-blown usage of networked computers. Happily, the accompanying paradigm has not to be invented as it exists for a long time already in the world of society news. There indeed, everyone who has to reveal something does so directly via public media like press releases, interviews, statements, public reports, meetings, press conferences and the like. Based upon these open publications the publisher of a newspaper comes into action. He selects on quality, relevance and topicality for his target group, he edits, comments, adds ads, lays out and finally issues his newspaper. In short, he does exactly the same as his counterpart in the world of scientific news except for one difference: he does not claim ownership of the original press release. At the best he has a scoop.

Although practically all the news in a paper or a magazine is basically public domain stuff, readers still subscribe to such a product and are apparently willing to pay for it. What they pay for is the value added by the publisher. But this value is produced in competition with others, which brings in such factors as timeliness and efficiency. Then the sky is no longer the profit limit.

Fig 2. Future public domain article flow chart

Ginsparg and others urge a completed article be consigned directly to the public domain via the Internet. For that purpose universities, learned societies or libraries should provide secure document servers. Such a server stamps indelibly on every article the exact moment of its delivery and writes it then to a read only memory. The whole world has access to these servers. They function as the digital scientific equivalent of the public news briefings and press releases in the ordinary world. Everybody may read, print, refer to or quote from the stored articles, transfer them to their own environment or forward them to others. Every publisher, established or newcomer, may select an article for its content and quality and include it in an electronic (or printed if desired) journal he issues. The whole process of referee-ing may remain in tact and, just like today, result in a highly valued published product. However, crucial is that the quality selection follows the open publication instead of preceding it.

Scientists who lack the time or the inclination or the assistants to comb all the document servers and who, moreover, value a reliable and high-quality news service in their field subscribe to such a published product or request their library to do so. But this news service is delivered in mutual competition, just as is the case with newspapers.

The main characteristics of such a new approach are:

1. Global instant publishing is a reality. At the very moment an author wishes to reveal his ideas to the world one key stroke will do.
2. Abuse of scientific competitive knowledge is over. Accurate to a split second it is known worldwide who was the first to put a new idea into circulation.
3. Copyright can remain with the original author(s). Money devouring intermediaries like copyright clearance centres and local or international publisher associations move out of scope. For scientific articles they are no longer necessary, if they ever were. Admittedly, the situation is more complex for books where an author may receive revenues from sales. Therefore, he may need an agent. In that case he

could request his university to represent him and come to terms with the publisher involved directly.

4. Authors don't have to peddle their articles around and publisher's rejection costs fall away. To illustrate this, a rejection rate of 70% to 90% is not exceptional for the better journals. For authors this means that they have to submit their articles over and over again. For publishers it means that they have to explain over and over again why articles are rejected. Both inefficient processes will become obsolete.

5. The quality of the quality selection ameliorates. No longer a couple of anonymous and isolated referees, with their possible biases or personal interests, but the entire reference group is able to take direct cognizance of the article. As a side effect, plagiarism is unearthed easier.

6. If peer review leads to a revision of the original article, both the original and the revised version plus the audit trail itself can be made available to the public. This can be very instructive, especially for young scientists preparing their maiden publication.

7. All articles of the same author are easily available and sorted according to their publication date. Self plagiarism i.e. the relentless recycling of the same idea becomes awkwardly visible that way.

8. Adding value to the process of scientific communication by quality and relevance selection, editing, laying out, improving accessibility and dissemination becomes subject to the mechanisms of the market. Efficiency will increase, prices will drop dramatically.

9. Needless to say that the entire process of document supply as we know it now, may fade away and will be limited to articles from classical paper journals

Although the advantages of the new approach to scientific communication are apparent, I must admit that in Delft, and to the best of my knowledge in the Netherlands as a whole, no real progress in this direction is being made. There have been some dispersed small scale pilot projects none of which broke through. The technology as such is not the real problem, at least not for the library in Delft. Half a year ago we completed a six partnered European project in the field of aeronautics, called Eurillia. The requirements, which we met, were to build a transparent search engine for the diverse formatted catalogs of the partners, then tag each of the catalog records to an abstract insofar as available and, last but not least, tag these abstracts in their turn to a full text document, again insofar as available. Due to the four year duration of the project, the whole solution was build in a Windows environment. Recently we succeeded to operationalise a beta version of a Netscape solution with, as an extra achievement, the option of simultaneously searching up to fifty catalogs of your choice. In another project we have used Topic, a product of Verity, for automated indexing of pieces of text. The first applications were succesful so far. So, to paraphrase an American president, "The liberation of the libraries has begun."

But there is still a major hurdle to take, namely the availability of full text documents, be it scanned paper or original electronic files. Our experience in

the Eurillia project was that neither the research institutes nor the individual authors objected if we wanted to make their full text documents available via our documentserver. On the contrary, the more exposure the better. However, as soon as they could no longer dispose of the copyright of their own articles, because they had assigned it to a publisher in exchange for publication, the process blocked. As a consequence, only two hundred reports and dissertations could be loaded on the server. And we were even lucky; more than half of the 1992 granted European library projects were suspended last year because of unsolved copyright problems. Publishers besiege the European Committee for even the tiniest copyright issue. From their stance I understand that. Every mediaeval lord became nervous after the invention of gunpowder. And the Internet is digital gunpowder, in fact dynamite, for their paper castles.

The difficulty of acquiring full text documents is concatenated to the status of the electronic publications. So far, scientists prefer their articles to be published in prestigious glossy journals. Apart from 'le plaisir de se voir imprimé', it is the rating policy of granting institutions and universities which make this classical mode of publishing so attractive. For example, a year ago our own university adopted a new model for research financing that highly estimated publications in established journals and fully ignored electronic publications.

But there is hope. I quote The Economist of the 22nd June last year:

"In Helsingor, Denmark's minister of research and information, Frank Jensen, announced plans to give scientists cheap access to a high-speed optical fibre network funded by the ministry if, in exchange, they agreed to publish their pre-prints and articles on the Internet."

It could be interesting to hear something about the response to his incitement. In the meantime, it is worth notifying that the Delft library has been approached already several times by young scientists who wanted to go electronic for official publications. In this respect the announcement by the board of my university of the merger of the Delft University Library and the Delft University Press is an interesting development.

This brings me to the role of the library.

If the foregoing has given you the impression that the Delft Library in the meantime might be handicapped I must hasten to correct this. For libraries this is a golden time. In our strategic plan "The Delft Wizard" we wrote:

"All actors in the information sector are enjoying a daily worldwide free advertising campaign. "Internet", "digital", "multimedia", "cyberspace", "superhighway" and "hypersomething" are some of the felicitous words."

We also have entered the digital arena. As long ago as two years we scan requested scientific articles and then forward the scanned image either to our own printer, thus producing the classical hard copy, or to the fax machine of our client or to his printer, whatever his preference is. For this we use the well

known top scanner of Minolta, who has been and still is our partner in this avantguard project. During 1996 we succeeded to computerise the whole logistical part of the document supply process. To day the result has found its way to the library market under the name DocUTrans, a combined product of Minolta and DUTL which meets serious interest of several of the bigger document suppliers among the libraries.

Also since mid 1995 we offer the university over 40 databases through the university network. For that purpose we downloaded all these different databases from their respective CD ROM's to the hard disks of a server at our university computer centre. This was quite a project at the time lacking the Silverplatter or OVID solutions which are available now. Today we are eagerly waiting for the database producers to apply the Z39.50 standard. That enables us to use our aforementioned Netscape application for simultaneously searching these databases.

A third result which I think is worth mentioning is the development of what we have christened the Personal Composer . This all-round information processor will allow authors to find and retrieve the needed information easily and to incorporate this information in the (multimedial) publications they are working on. At the retrieval side it offers all the well known search engines like Alta Vista, our Z39.50 client for structured searching of databases and the Topic search engine for Topic indexed documents, all fully transparant in a Netscape environment. Whenever a search results in a useful quotation, be it full text, a graph, picture or formula or a reference, a simple click and drag operation transfers the quotation to the publication you are working at in the textprocessor of your preference. Someone called blasphemously the Personal Composer a plagiarism engine. Rightly so!

However, I must emphasize that this digital coming out as such does not reflect our main line of thoughts. These thoughts are best keyworded by terms like knowledge management, quality and medium indifferent information provision. Technology then is a means, not an end.

With respect to the quality issue it might interest you that since Januari of this year our document delivery process is ISO certified. To our best knowledge it will position us as the first ISO certificated document supplier in the world. Next year we foresee an equivalent step for our services at the information desks, both in the central library and in the 16 faculty libraries.

Finally, I used a moment ago the term medium indifferent information provision. To illustrate this I use the example of our Maritime Information Centre. Two years ago we acquired this centre and moved it from Rotterdam to Delft. They brought in two databases, one of scietific articles and one of ship descriptions, a biweekly issued newspaper clippings, an alerting service and a highly specialized collection. We are now adding the our original Delft maritime information assets to that. To begin with, our own broader based maritime collection, but also a database with current maritime research projects, relevant maritime adresses of experts, institutes etc. Interesting is further that, without any problem, we got permission from the Delft University Press to produce an electronic version of their Shipbuilding Progress Report, the only maritime journal of international standing in the Netherlands. Finally,

this whole set of content based information is embedded in a library infrastructure of high quality document supply, trainings etc on the one hand and a maritime research and education community on the other hand.

The first thing we are going to do next is to convert the various interfaces and search applications of the available products to de facto standards. For example Oracle for all the databases involved, Netscape as the common interface, Z39.50 for searching, TCP/IP for networking etc. and then bring all these information sources together in one maritime homepage. But that is not enough. We discovered that there is a substantial need for information supplied by telephone as well. Partially because not everybody is as computerliterate as the actual hype makes us believe. More importantly, because searching for information is still time consuming. Above all, the network does not have most of the relevant answers. So, in September we will officially open a telephone desk for maritime information. We are not the only ones to do so. Although companies like Microsoft or HP have a high profile on the Net, they offer explosively growing call centres as well. Last but not least, we would deny our roots if we would not continue to offer good old paper as an information medium as well.

With this I hope to have given you an impression of what I meant by medium indifferent information provision and by organizing information. In fact it is our idea of our value adding role in the information chain. Libraries have a golden future.