TELLING A DIFFERENT STORY IN OPEN ACCESS JOURNALS?

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Introduction

A scholarly article tells a story of research. Christine Borgman (2000, p. 418), professor of information studies at UCLA, notes that "Scholarly documents are not simply artefacts of communication: rather they are the embodiment of scholarly communication processes, such as the negotiation within a research team about what story will be told". How this process of negotiation works has been carefully described by the sociologist of science Karin Knorr-Cetina in her 1981 study of how knowledge is "manufactured" in a plant protein research laboratory. She shows how the many choices that were made in the research process and the contextual coincidences that influenced the direction of the study are removed when the story of the research is told in an article. The story is adjusted further by the various people – colleagues, directors, reviewers – whose suggestions go into the final article.

The story told in a research article is influenced by genre and disciplinary conventions that the authors have appropriated along their path to becoming members of the community of researchers. Some attempts have been made to formalise the conventions, both with regard to how the narrative is told and to the visual appearance. Such attempts can be found in the various style guides published by scholarly associations and publishers. Over the years, since the first scholarly journals were published in 1665, these conventions have changed in many ways. For instance, article titles in physics and biology have become more focused on results, as have abstracts, which are a feature that have become more common in the second half of the 20th century (Berkenkotter & Huckin, 1995, p. 33 ff.). One of the most influential students of the rhetoric of the scholarly article, Charles Bazerman (1988), observed a change in the function of illustrations in the *Physical Review* between 1893 and 1980. Over time, the figures became more abstract and focused on results, rather than the methods-centred illustrations of drawings of apparatuses that appear in the early volumes of the journal.

These changes have been confined largely to how the story of research is told in the print journal. With the advent of electronic journals, the question arises of whether or not the research process and its results may be presented differently when new modes of representation, such as audio, video, interactive applications, or access to databases, can be employed. Can the stories be told differently when new tools are available to support other narratives? Several advocates of e-journals have seen potential for the communication of research in a switch of media, not only when it comes to increased accessibility and distribution speed but also in narrating the research (see e.g. Ginsparg, 1996; Hurd, Weller & Crawford, 1996; Willinsky, 2006). They also caution that the use of new modes of representation may take time. In the following, I would like to report on a study of how far along the road this predicted development had come in 2006-2007.

Remediation, the theory of how one medium borrows or retains features from other media, provides a useful terminology for framing the discussion of how the document type of the scholarly journal in electronic form relates to that in print. Jay David Bolter and Richard Grusin (2000) suggest that the relation between two media can be understood in terms of how a new medium combines properties from an existing medium with properties that are unique to the new medium. As part of social, technological, economic, and material practices, a medium has similarities to existing media, but often highlights some properties that make it superior to them (Bolter & Grusin, 2000, p. 273). The web is a good example of this; it mimics the properties of, for instance, printed matter, radio, and television, but provides these services with better accessibility both in time and space, thus "improving" the products and services supported by the medium. If one views it in terms of how a document type or genre is "revamped" in a new medium, the scholarly journal is a good example of how a print product is suddenly available much quicker on the web, something that affects for example scholars' information seeking behaviour.

In the following, I will discuss how the scholarly journal is remediated on the web. The study that the discussion is based on (Francke, 2008) investigated open access journals. As it may be of interest to the readers of *ScieComInfo*, I have included some characteristics of the journals that were studied.

The journal sample[1]
The journals that I chose to look closer at where so-called editor-managed journals (cf. Kaufman-Wills Group, 2005, p. 5), i.e. they were in most cases

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[1] Further details concerning the sample and the study design can be found in Francke (2008).

published by editors rather than by professional publishers. This is a type of journal that a couple of studies have indicated were typical of full open access journals for at least the first half of this decade (Hedlund, Gustafsson & Björk, 2004; Kaufman-Wills Group, 2005). This means that journals by some major open access publishing initiatives, such as BioMed Central (BMC) and Public Library of Science (PLoS), were excluded, as were open access journals that were part of large digitisation initiatives such as SciELO and J-STAGE. The journals included in the study were restricted to those that were peer reviewed and in one of the languages Danish, English, French, German, Norwegian, or Swedish. A sampling frame was identified from the *DOAJ* and *Open J-Gate* databases. A total of 689 journals were identified in spring 2006, of which a sample of 265 journals was selected for a quantitative study.

The vast majority of the journals (70.2%) in the sample were published by universities, university departments or university libraries. The gap to the next largest groups was considerable; 9.8% of the journals were published by a university press or an e-journal initiative, and 7.2% each by another type of non-profit organisation, or using the journal name, with little more information offered. It is interesting to note that these figures differ a great deal from those found in the Kaufman-Wills Group report (2005, p. 30) of *DOAJ* journals when the journals of the two major commercial publishers BMC and ISP were excluded. In this report, only 25.6% of the journals came from universities or university departments, and a further 28.8% from non-profit organisations. Commercial publishers were more common in the study by the Kaufman-Wills Group than in the present study, with 10% compared to less than 1%. It is difficult to speculate on the reasons for these differences, which could have to do with the different criteria used to delimit the journals included in the two studies; with a different categorisation of e.g. university presses; with the approximately two years that passed between the two studies; or with a bias in the self-selected sample used in the Kaufman-Wills Group study.

The journals were published mainly in English (85.3%), but 9 journals were in French and 12 in German. Because of the restriction to some European languages, and with the domination of English, it could be expected that there would be a majority of Anglo-American journals. This was also the case, with 52.5% of the journals being published in countries where English is the first language of most speakers (USA, UK, Australia, Canada, New Zealand, and Ireland). However, 43 different countries were represented. Although there were no journals in the sample that were published in any of the Scandinavian languages, the sample did contain six English-language

journals that were published in Scandinavia and one from Estonia.

Continents	No of journals (%)	No of countries
Europe	105 (39.6%)	22
USA & Canada	89 (33.6)	2
Latin America	10 (3.8%)	3
Asia	23 (8.7%)	12
Australia & New Zealand	23 (8.7%)	2
Africa	1 (0.4%)	1
Mix of countries or hard to determine	14 (5.3%)	--

Table 1. Continent of origin of the journals in the sample.

The journals represented various disciplines; the sample contained journals from all of the main categories in the *DOAJ* subject tree (cf. Francke, 2008, p. 195). The number of journals listed with a journal impact factor in the *ISI Journal Citation Reports* was low, only 7.5%. The spread of the impact factor of the journals included was from the 8th to the 99th percentile.

In addition to the quantitative study, I conducted a smaller qualitative study of four journals. This study allowed for the full journal to be investigated in more detail, rather than being restricted to a few issues or articles, as in the quantitative study. Four journals were selected because they displayed interesting and innovative features that are not found in print journals: *assemblage: the Sheffield graduate journal of archaeology*, the *Journal of Interactive Media in Education* (JIME), the *Journal of Music and Meaning* (JMM), and *The International Review of Research in Open and Distance Learning* (IRRODL).

Remediating the print journal

Same but different
The change of medium from print to the electronic, net structured world wide web implies a number of changes. For instance, distribution of the journal is facilitated or obstructed, depending on the tools available to the prospective reader. However, apart from this change – which is emphasised by the journals who strive to provide accessibility through open access – the characteristics of the print journal are often retained. Most keep the structure of the print journal by providing a table of contents page. However, the front page characteristic of web sites is given a prominent position with a link to the various table of contents pages. In 18.9% of the cases, the table of contents, with links to the articles in the most recent issue, is displayed on the front page. The

inheritance from the print journal is most prominently illustrated though the use of file formats at the article level. A clear majority of the journals in the sample, 72.8%, publish the articles in their most recent issues as PDF files. This is a choice of file format which makes the article reminiscent of the print publication. PDF was in fact designed to store and transfer paper-like documents electronically. A print-out of the PDF file will in most cases provide a product that is similar to a photocopy of an article in a print journal.

The seeming dominance of PDF is somewhat modified, however, by the fact that approximately 20% of the journals publish their articles in more than one format, 15% in both PDF and some version of (X)HTML. This is a way to provide a service to readers who may wish to read online and take advantage of the flexibility of (X)HTML or print the article and receive a product that is professionally designed for print. Furthermore, it cannot be assumed that the PDF is to be considered the more polished or archival version. In JMM, for instance, a PDF is offered as an alternative for those who wish to print it, but the HTML file is the primary file format and the one that contains all illustrations. Despite these modifications of the dominance of PDF, it can be noted that a number of the journals in the study switch from (X)HTML to PDF over the course of their publishing life. Although HTML is a more common choice in the first issues of the journals that began in the second half of the 1990's, PDF becomes more common in the most recent issues, as well as in both first and latest issue articles in journals that started after 2000 (see figure 1).

before.

Different but similar
The example given above of journals that provide access to their articles in a variety of formats illustrates one way in which the open access journals use the electronic medium to provide added value in a way that can hardly be accomplished in a print journal. In fact two journals in mathematics offer their readers a choice of downloading articles as PDF, PostScript, DVI, or TeX files. Another advantage offered in e-journals is the possibility of searching for words and phrases in the various articles or in the journal as a whole – a distinct improvement on the back-of-the-book index. The various applications used for rendering PDF, (X)HTML, or Word files offer ways to search the file displayed and, in cases where an article is stored as one file, thus search the full text of the article. As an added service, 45.7% of the journals in the sample provide a local search engine that makes it possible to search only the material in the journal. The open access journal articles can, of course, also be found through global search engines. Both these examples show how the print journal is expanded when it moves to a new medium, while retaining many of the properties of print. It does, however, greatly affect the information practices surrounding print journals.

A feature available in (X)HTML and, for quite some time now, also in PDF, is the hyperlink. In e-journal articles, hyperlinks are sometimes used for automating the act of following a reference in the main text to the foot or end note text. A similar use is employed when
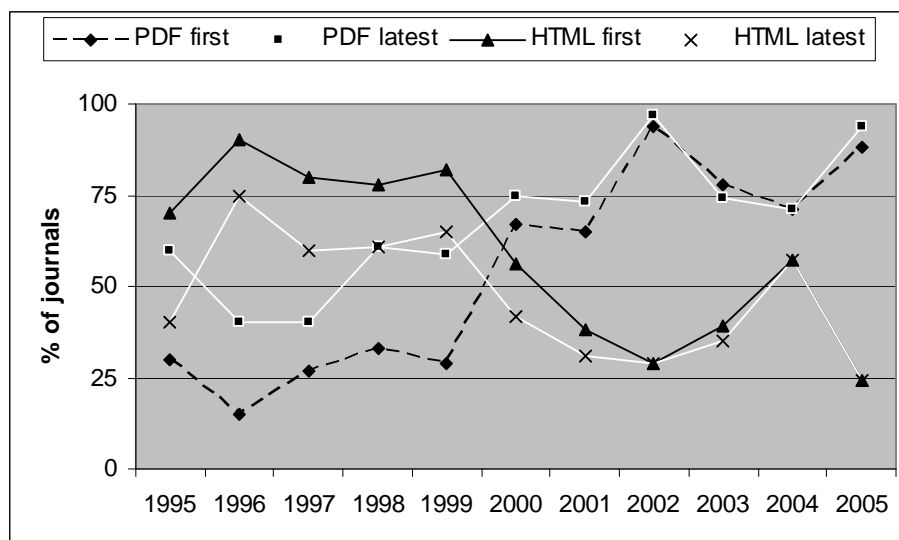

Figure 1. The proportion of journals publishing the articles in their first and latest issues in PDF or (X)HTML by year of their first issue. The use of the two file formats is not mutually exclusive. (Reproduced from Francke, 2008, p. 211).

Based on the preference of PDF as the file format of choice, it is easy to assume that it is mainly increased accessibility and ease of distribution that is in focus for the editor-managed open access journals, whereas the story that is told of research remains much the same as

the reader is sent from the article references directly to a source available online. This constitutes an improvement on the traditional system of references found in print journals. However, some examples can be found that indicate a use of hyperlinks that goes

one step further. In the *Cuneiform Digital Library Journal*, when a cuneiform tablet is mentioned, hyperlinks refer the reader to a record in the Cuneiform Library Initiative's database of descriptions and photos of cuneiform tablets. A more interactive, reader initiated and controlled example comes from IRRODL's use of the Open Journal System, the same journal management system used to publish *ScieComInfo*. Double clicking a word in the XHTML version of an IRRODL article opens the Definitions window, where the word has been entered into a search box. The reader can choose in which of five different sources, including Google, *Merriam-Webster Online*, and *Wikipedia*, to look up the word. The remediation here is not of the print journal, but of the process of looking words up in a dictionary.

The examples offered here of how the e-journal provides services not available in print show the reader as actively interacting with the journal in ways that have been facilitated and anticipated (through searching, selecting a suitable file format, or accessing other sources). Yet these are improvements on the print journal that affect the information behaviour of researchers rather than the story told. I will turn now to a few examples that indicate an aspiration to tell that tale through other tools than the habitual ones.

Telling a different tale?

An indication that the story told in the scholarly journal is actually a new one – or at least one told through new tools – can be found in journals that integrate other modes of representation into the text- and, to some extent, image-prone journal. In this way, both the text and the audio/video file or application are recontextualised. So far, this is not a very common feature in the open access journals. Only 4.2% of the journals in the sample used audio or video files or included some kind of application as part of the argument put forth in an article. Audio files and animations are used extensively in the music journal JMM to support the analyses made. Several articles contain examples of music that the reader can choose to listen to in order to gain access to the work that the author analyses. One article (by Thoresen in JMM 4, Winter 2007) even includes a short animated section in a QuickTime file that illustrates the author's claim. A similar approach to including research data into the articles is made by JIME, where videos of children playing with the tool that the article describes are included (article 1998:7). The case is similar to the text quote that so frequently occurs in scholarly articles (in fact approximately 70% of the journals contained a block quote in at least one of the articles in their latest issue). However, rather than quoting a work of literature or scholarship at length, or reprinting a painting or photo, these articles include their material

as sound or moving images. The consequence is that material can be included in forms – and perhaps in disciplines – where earlier this was not possible. It will be interesting to see how this will come to influence the tale told about science.

JIME includes applications – small computer programs – that the reader can interact with in articles where the applications are introduced and discussed, for instance as examples of educational tools. Here, the reader can not only take part of the material, he or she can in fact interact with the material – try out the tools herself. One step further on the road to a reader that is actively interacting with the article are the fora and comments to articles that invite readers to contribute to the article in various ways, as well as the open peer review system available in JIME where readers can influence the accepted article by submitting suggestions of changes. Interesting potentially new ways of telling the story of research may emerge as a result of the inclusion of non-traditional modes of representation in scholarly journals as well as from a more lively discussion around articles. Both forms invite a more active reader who could help shape the narrative.

Conclusion

Will the future see more wiki articles where scholars collaborate around research articles in the same way as some researchers today contribute to *Wikipedia* entries? Will articles become more multimedial and erase the line between scholarly article and conference presentation? Will journals become more of digital libraries, containing data collections that readers may manipulate and analyse, thus bringing their own interpretation to that of the original author's interpretation? These are all ways that will change the way that research is narrated and the way in which we take part of that narration. Or will the stories the journals tell continue to follow very much the same narratological patterns? At the moment, there are only a few indications of radical shifts in the storytelling, although how make our way to the stories has changed dramatically.

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