

# Summaries

HEINRICH PARTHEY

*Zeitschrift und Bibliothek im elektronischen Publikationssystem der Wissenschaft*

*Journal and Library in the electronic Publication System of Science*

## Summary

The scientific journal is viewed in its historical development from the exchange of letters between scholars evidencing research results and discoveries through the development of the first scientific journals to the evolution of the scholarly electronic journal and the idea of the scientific journal as a special library in its disciplinary field. While being an organ of a research institution or organization, the scientific journal has experienced a new dimension within the networked scientific environment establishing it as a digital library within its own field. By virtue of its task to establish authenticity of methodological problem-solving within a specific scientific discipline, the form of scientific communication has moved from the exchange of correspondence between scholars to the establishment of scientific journals – most often within context of the scientific societies – and finally in the network-based exchange of knowledge, the realm of comprehensive electronic documentation of replicable scientific discovery. In the late nineteenth and complete twentieth centuries, the mark of recognition for the researcher was connected with the prestige of having published in a renowned journal established among peers within a scientific society.

The library has taken on an important role within the scientific system and as an element of the evaluation system for the institutions of higher education. Citing Leibniz' views on the function of historical research libraries, Parthey notes the major functions of the modern scientific library structure as 1) the administration of published knowledge on methodological problem-solving, 2) the storage of the documents and 3) provision of space for utilizing such documents. Within the scope of the digital library, this is expanded, however, to the global network of the "information universe."

Since the advent of scientific journals in 1665 with the journal of the Royal Society, scholarly journals and scientific publications, can be recognized according to Wilhelm Oswald's theory of procedural milestones in establishing a new scientific discipline: first, a university chair is founded for that particular new scientific area, second a textbook on the subject is written, and third, a new scientific journal is established for promoting knowledge of scientific research in the new discipline through publication. Parthey then turns to treating the journal as an organ of a scientific institution and discusses their fundamental structures in the digital era.

At the beginning of the electronic journal, the characteristics of tradition print journals were transferred to the electronic formats: namely, the task of establishing authenticity of the scientific results, minimized replication of the problem-solving method, and methodological replicability, as well as demonstrating a comprehensive overview of the major previously published literature of the field, establishing the credibility of the author in his own standing. This included standardized citations, which in the digitized format could be expanded into hyperlinks and reflection of the net-based infrastructure of a specific discipline.

The "serials crisis" in the mid 1990's is discussed for its relevance on the development of new scientific journals, and as a final statement on the status and position of scientific journals in the 21<sup>st</sup> century, Parthey summarizes the recommendations of the information and publication system of German institutions of higher education as put forth by the Vice-Chancellors of German Institutions of Higher

Education (from 5 November 2002). These recommendations include several solutions for the structural problems of German institutions of higher education, including recommendations for greater cooperation among institutions of higher education and better consortial agreements to equalize access to major scientific publications, use of usage statistics as a basis for determining acquisition and licensing policies, better access conditions for all participants in the scholarly chain and expansion of open access servers for institutional publications of institutions of higher education as a support system for scholarly communication without direct binding to the commercial publishers. In addition, online information provision must be enhanced by infrastructural means, including closer cooperation and even integration of technology-oriented departments and information provision departments within individual institutions (i.e., convergence of content and technology providers, libraries and IT units). Furthermore, the Vice-Chancellors recommend that German institutions of higher education support online publication measures, especially those which allow open access to research and educational materials. Distributed, but closely networked and coordinated systems for higher education research and publication should be given greatest priority in the development of new structures at German higher education institutions. In addition, recommendations for dealing with licensing agreements are given to assist especially libraries which traditionally have not dealt with the direct terms and conditions of access rights for use of information but rather purchased, catalogued and stored the necessary information available from published sources.

## REGINE ZOTT

### **Der Brief und das Blatt. Die Entstehung wissenschaftlicher Zeitschriften aus der Gelehrtenkorrespondenz**

#### **The Letter and the Newsletter. The Evolution of Scientific Journals from Correspondence between Scholars**

##### **Summary**

Private correspondences are documents of history, culture, language, ideas and human relations. Private correspondence means intersubjective verbal written exchange of informations on conditions of local distance of the partners and temporal distance of writing down up to reception with the aim to win individual and collective knowledge as well as emotions. Private correspondence is a medium of informal communication, is confidentially, spontaneously, triggers further gnostic reflections and emotional associations by the corresponding partners. Formal communication is organized, institutionalized, legally available; this latter form includes official documents, publications or open debates. Formal and informal communication relate to each other; the development of formal medias is prepared by informal medias, and, once existing, formal canals modify the informal medias.

Up to 17<sup>th</sup> century, the private correspondence in a meanwhile half-official wise fulfilled the function of an allround-information-media between scientists. When grow the number of scientists and their specialities, private letters could no more meet the requirements of communication between scientists. Newsletters and journals evolved as a new form of official communication. The correspondence of scientists now lost that half-official character and modified as informal communication.

The physicochemist Wilhelm Ostwald consciously used the correlations of informal and formal communication. Moreover, he regarded it as an urgent subject of scientific exploration, for using communication canals as effectively as possible.

## HORST KANT

**Disziplinäre Gesellschaften als Träger von Fachzeitschriften. Einige Anmerkungen zur Entstehung physikalischen Zeitschriften im 19. Jahrhundert in Deutschland****Disciplinary societies as supporters of scientific journals. Some remarks on the genesis of physical journals during the 19th century in Germany****Summary**

There are not many studies on the history of scientific journals under the aspect of history of science. This study mainly deals with physical journals in Germany during the 19th century, notably *Annalen der Physik* (formerly *Annalen der Physik und Chemie*) and *Fortschritte der Physik*, and will discuss a few aspects of this subject, especially in connection with the genesis and evolution of scientific societies. While the *Annalen*, founded in 1799 (1790), only had a single editor – between 1824 and 1877 it was J. Chr. Poggendorff – and mainly published original scientific papers, the *Fortschritte* were founded by the *Physical Society of Berlin* to be published annually with the aim to review the progress in the different branches of physics during the preceding year. It is shown that such a reviewjournal was possible only with the help of many authors, and only something like a society was able to manage the necessary expenditure (although with a lot of difficulties, too). The development of the physical journals is compared with the development of some journals in chemistry, physical chemistry and electrotechnics. It seems, that the founding of new journals mainly went together with the birth of specialized scientific societies during the second half of the 19th century. The societies understood the publication of journals as a means toward their own institutionalization. Due to the rising of costs of the production of journals on the one hand but gain of prestige on the other hand for both sides, the scientific societies were also eager to take over successful journals (e.g. the *Physikalische Gesellschaft* in 1895 gained influence on the *Annalen*).

## Manfred Bonitz &amp; Andrea Scharnhorst

**Überlegungen zu einer Theorie des Matthäuseffektes für Länder****Considerations about a theory of the Matthew effect for countries****Summary**

The paper starts with a discussion of recent statements which are mainly directed against the impact factors of scientific journals. We believe that this discussion is driven by a certain misunderstanding of the nature of the impact factor. Consequently, we shall make some remarks concerning the essential features of citations and particularly of journal impact factors.

In the research about the so-called *Matthew effect for countries*, the newly introduced concept of *Matthew citations* plays an important role. The calculation of these specific citations requires knowledge of the number of *observed citations* and *expected citations*, the latter being derived with the help of journal impact factors.

Matthew citations (MC) are not only a tool for the ranking and evaluation of countries in science but also a new indicator for the scientific journal, as the most important scientific journals (*Matthew core journals*) possess the highest number of MCs. MCs seem to be an indicator of the competition strength of a journal, and as such reflect a dominating feature of the science process, analogous to competition in economics.

In future, MCs are hoped to be the main components of a comprehensive theory of the Matthew effect for countries.

**DIANN RUSCH-FEJA & UTA SIEBEKY**

**Von Klick zu Klick. Die Entwicklung der Nutzung von elektronischen Zeitschriften. Zwei Nutzerbefragungen 199 und 2001 in Max-Planck-Instituten**

**From Click to Click. The Development of Use of electronic Journals. Two Usage Surveys from 1999 and 2001 in the Max Planck Institutes**

**Summary**

Two surveys on the use and acceptance of electronic journals were conducted in 1999 in all the research Institutes of the Max Planck Society and in 2001 in the Institutes located in and near Berlin. From the individual surveys and especially from the comparison of the two surveys, it is evident that in a short time, electronic journals were fully accepted by the researchers. Certain properties of electronic journals, however, have not yet been fully integrated into the researchers' work and the corresponding potential of electronic journals is thus not fully realized.

The data of these two surveys show that access to networked information, electronic journals and electronic publication have attained a high value for the researchers in the Max Planck Society and they can no longer do without electronic journals. There are exceptions and differing levels within the survey results, but the predominate majority confirm the usefulness and the significance of electronic publications for their work. The use of electronic journals from specific publishers and digitized journal collections (such as JSTOR) demonstrate increases in use which are also analysed according to the researchers' use in the various disciplinary sections of the Max Planck Society (bio-medical, physical-chemical-technological and humanities-social sciences). Survey answers regarding the particular advantages and disadvantages of using electronic journals, such as continuous availability, downloading possibilities, cross access availability, lack of permanent archiving, etc., show distinct changes over the two years which substantiate higher acceptance and use. The survey results also show that the use of electronic journals is influencing the way researchers use and process information, and the entire process of publication is moving in favor of electronic forms. The results of the two surveys have also contributed to realizing more electronic services within the library and information provision services for the Max Planck Society researchers.

**ALICE KELLER**

**Zeitschriftenkonsortien: Sinn oder Unsinn?**

**Journal Consortia: Sense or Non-Sense?**

**Summary**

The purpose of a library consortia in the academic world lies in the cost-effective licensing of electronic resources for the scholarly community. The coalition of libraries or universities in order to negotiate a common license agreement is helpful in many ways, both in respect to financial and staff resources. Consortial licensing has developed into a common practise at academic libraries since the second half of the nineteen-nineties.

This article gives an overview over the advantages and disadvantages, or sense and non-sense, of consortial models for scholarly journals. Discussions are based on the experiences and user statistics of the e-journal collection of the Swiss Federal Institute of Technology (ETH) Zurich.

The ETH Library offers patrons access to 3.200 e-journals, 1.750 of which are available through the Swiss National Consortium (status March 2002).

The advantages described in the article include consortial gain (increased collection and cross access), minimisation of the administrative workload for the individual libraries, and economic benefits.

The disadvantages are more difficult to define. The author draws a scenario of the future in which distinct library collection profiles disappear in favour of consortial collections. It is important also to remember that consortial collections will never cover all user requirements. Libraries are already beginning to feel that consortial deals are increasingly binding a large portion of their acquisitions budget. Finally the author discusses the vast increase in unwanted titles.

MATTHIAS KÖLBEL

*FORUMnovum Dynamic Publishing. Ein Konzept für die Zukunft des wissenschaftlichen Journals*

*FORUMnovum Dynamic Publishing. A concept for the future of the scientific journal*

#### Summary

Since years the scientific press has been in a deep crises: Libraries and publishers are trapped in a vicious circle of increasing fares and decreasing numbers of journal subscriptions. *FORUMnovum Dynamic Publishing* - a concept for future scientific journals developed by the author together with three fellow students - shows a promising way out: cost reductions up to 50% and improvements of scientific quality control are possible!

The future of the scientific journal lies in the internet. But today's e-journals simply imitate the established print editions, and thereby wasting much of the potential benefits of electronic publishing. In contrast, *FORUMnovum Dynamic Publishing* re-engineers the whole publication process and comes up with several major innovations:

- Articles are refereed by all readers after publication, which reduces cost and opens up chances for radical new scientific ideas suppressed by traditional peer review procedures.
- In order to improve scientific quality control, any article shows immediately its quality assessment by its readers.
- Pre-publication efforts, such as editing all articles by the editor's staff, are reduced, making the publication process much faster and cheaper.
- Editors and authors pay for the journal instead of its readers, leading to lesser but better articles.

*FORUMnovum Dynamic Publishing* offers several advantages over today's journals: Readers would benefit world-wide from the quick, free-of-charge, and instant access to any article. Authors would appreciate the opportunity to publish quickly without the months' delay usual today. Furthermore, some disadvantages of traditional peer review - e.g. its disapproval of innovative scientific ideas and the inevitable conflict of roles faced by referees judging competing scientists' manuscripts - could be overcome, while strengthening the scientific quality control: readers can immediately attach their quality assessments to an any article. Libraries would save scarce space and had full access to all journals without paying for it. And, last but not least, major cost reductions would be possible due to lesser pre-publication efforts.

From a technical point of view, realization of such a new e-journal would be no problem. But the economic prospects are different: The business model of *FORUMnovum Dynamic Publishing* is totally different from the predominant one. Its success would require major changes in the role of libraries, publishers, and scientists. Newly founded e-journals cannot accomplish such radical market transformations, because they are not accepted in the scientific world that has a strong tendency to publish in the most visible, internationally accepted journals. The inventors of *FORUMnovum Dynamic Publishing* therefore hope that some ideas presented here will be taken up by established journals and their editors.

**WALTHER UMSTÄTTER****Was ist und was kann eine wissenschaftliche Zeitschrift heute und morgen leisten****What is and what can be achieved by a scientific journal today and tomorrow****Summary**

At the beginning, more than 300 years ago, journals have had the function of prepublications as an emergence from the dairies of scientists. This was important for a faster development in science, by the change from personal mail contacts to the distribution of copies. Consequently today a scientist is trying to monitor the actual produced information by browsing roughly 10.000 papers per year as an average. But he is studying only one percent in detail. The growth of journal production is in direct relation to the growth of science. As more disciplines we have, as more scientists and journal publications we can observe. All these journals are mutual connected by the generalized Bradford's Law of Scattering, demonstrating the high interdisciplinary character of science. The amount of most probable 100.000 running journals with 10 million papers per year makes clear, that specialization and teamwork is growing. Now we have a discussion about the change from the printed P-Journals to the electronic E-Journals. Many experts believe that E-Journals will show a metamorphosis to interactive multimedia systems. But in reality we have to see, that WYSIWYG, PDF- or Postscript-Formats are attempts to have a total conformity in presentation of printed and electronic journals. Developments in the near future, with new products like multimedia databases, knowledge bases, or scientific models will be complements of the tradition of books, e-books, mails, e-mails, journals, and e-journals.

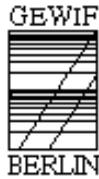
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