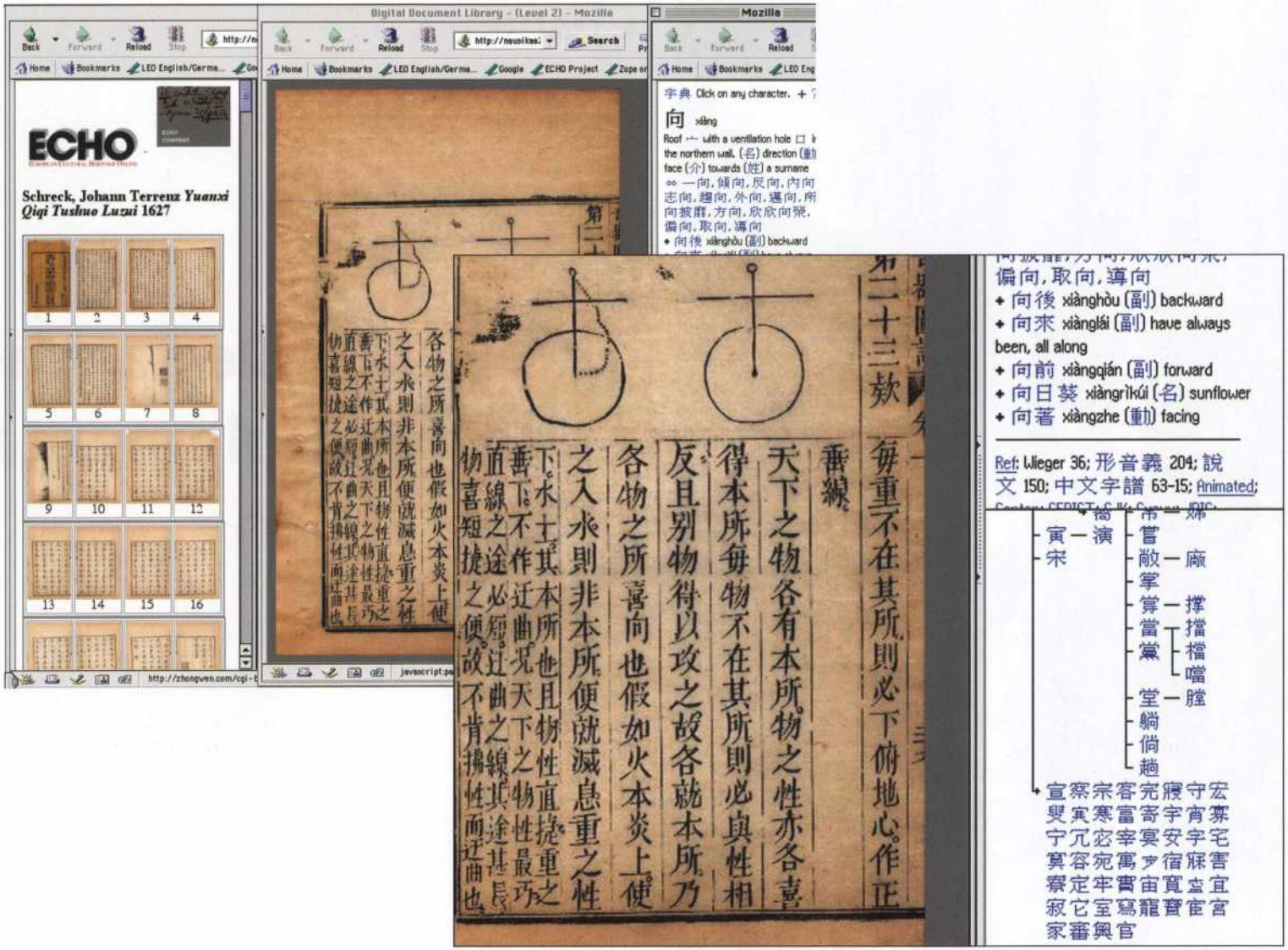
Chapter 3

The Berlin Declaration and the Implementation of the Vision


ECHO
Schreck, Johann Terrenz Yuanxi Qiqi Tushuo Luzui 1627
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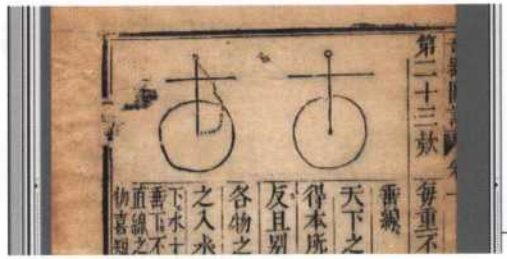
Mozilla
字典 Click on any character.
向 xiàng
偏向，取向，導向
向後 xiànghòu (副) backward
向來 xiànglái (副) have always been, all along
向前 xiàngqián (副) forward
向日葵 xiàngrìkúi (名) sunflower
向著 xiàngzhe (動) facing
Ref: Wieger 36; 形音義 204; 說文 150; 中文字譜 63-15; Animated;



3.1 The Berlin Declaration

How can the vision of a Web of Culture and Science be realized? Recently, for the first time the humanities joined forces with the natural sciences in an effort to create a common infrastructure for the representation of culture and science on the Internet. In October 2003 the Max Planck Society, together with the ECHO initiative, held an international Open Access conference in Berlin. Rather than just adding a new temporary project, the ECHO initiative aims at creating a core of a future permanent infrastructure to guarantee open access to cultural heritage in Europe. With its Heinz Nixdorf Center for Information Management and "e-Lib", an electronic library without walls, the Max Planck Society has already created an innovative, common infrastructure for its scientists. This infrastructure provides a promising platform for extending the open access culture, already well established in the domain of natural sciences, to include the humanities as well. This joining of forces between the sciences and the humanities was manifested in the "Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities," publicly requesting a profound change in the dissemination of scientific knowledge. The declaration has been signed by the Max Planck Society together with the alliance of the German non-university research organizations as well as by International Science and Cultural Heritage Organisations. The ECHO initiative took the occasion of the conference to make a first group of major collections, covering such diverse fields as the History of Arts and Architecture, Anthropology, Linguistics and History of Sciences, freely available in its new open access environment.

Signatories

On behalf of the German research organisations
(in alphabetical order):

- *Hans-Jörg Bullinger*
President Fraunhofer Society
- *Karl Max Einhäupl*
Chairman of the Wissenschaftsrat
- *Peter Gaehtgens*
President HRK
- *Peter Gruss*
President Max Planck Society
- *Hans-Olaf Henkel*
President Leibniz Association
- *Walter Kröll*
President Helmholtz Association
- *Ernst-Ludwig Winnacker*
President German Research Foundation

Further national & international Signatories:

- *Bernard Larrouturou*
Director General, Centre National de la Recherche Scientifique (CNRS)
- *Jürgen Mittelstraß*
President, Academia Europaea
- *Paolo Galluzzi*
Director, Istituto e Museo di Storia della Scienza Florence
- *Friedrich Geisselmann*
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- *Jean-Claude Guédon*
Open Society Institute
- *Martin Roth*
Director General, Staatliche Kunstsammlungen Dresden
- *Christian Bréchot*
Director General, Institut National del la Santé et de la Recherche Médicale (INSERM)
- *José Miguel Ruano Leon*
Minister of Education Cultura y Deportes Gobierno de Canarias
- *Dieter Simon*
President, Berlin-Brandenburg Academy of Sciences and Humanities
- *Jens Braarvig*
Director, Norwegian Institute of Palaeography and Historical Philology
- *Peter Schirmbacher*
CEO of the Deutsche Initiative für Netzwerkinformation
- *Georg Wick*
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- *Josè Traest*
Secretary General of the Fund for Scientific Research - Flanders (Fonds voor Wetenschappelijk Onderzoek - Vlaanderen)
- *Panagiotis Papagiannakopoulos*
Director and President of the Board, National Hellenic Research Foundation

Berlin Declaration
on Open Access to Knowledge in the Sciences and Humanities

Preface

The Internet has fundamentally changed the practical and economic realities of distributing scientific knowledge and cultural heritage. For the first time ever, the Internet now offers the chance to constitute a global and interactive representation of human knowledge, including cultural heritage and the guarantee of worldwide access. We, the undersigned, feel obliged to address the challenges of the Internet as an emerging functional medium for distributing knowledge. Obviously, these developments will be able to significantly modify the nature of scientific publishing as well as the existing system of quality assurance.

In accordance with the spirit of the Declaration of the Budapest Open Acess Initiative, the ECHO Charter and the Bethesda Statement on Open Access Publishing, we have drafted the Berlin Declaration to promote the Internet as a functional instrument for a global scientific knowledge base and human reflection and to specify measures which research policy makers, research institutions, funding agencies, libraries, archives and museums need to consider.

Goals

Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society. New possibilities of knowledge dissemination not only through the classical form but also and increasingly through the open access paradigm via the Internet have to be supported. We define open access as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community. In order to realize the vision of a global and accessible representation of knowledge, the future Web has to be sustainable, interactive, and transparent. Content and software tools must be openly accessible and compatible.

Definition of an Open Access Contribution

Establishing open access as a worthwhile procedure ideally requires the active commitment of each and every individual producer of scientific knowledge and holder of cultural heritage. Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.

Open access contributions must satisfy two conditions:

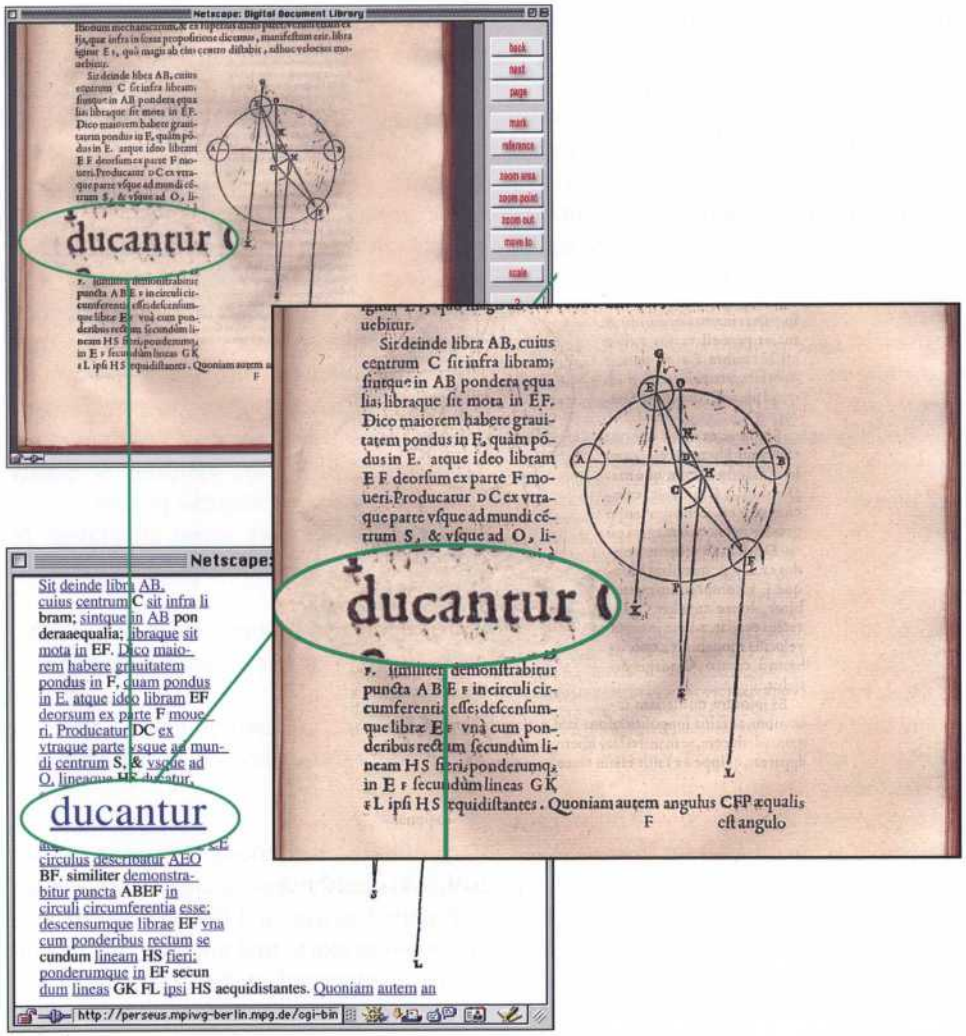
1. The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.
2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, inter operability, and long-term archiving.

Supporting the Transition to the Electronic Open Access Paradigm

Our organizations are interested in the further promotion of the new open access paradigm to gain the most benefit for science and society. Therefore, we intend to make progress by

- encouraging our researchers/grant recipients to publish their work according to the principles of the open access paradigm.
- encouraging the holders of cultural heritage to support open access by providing their resources on the Internet.
- developing means and ways to evaluate open access contributions and online-journals in order to maintain the standards of quality assurance and good scientific practice.
- advocating that open access publication be recognized in promotion and tenure evaluation.
- advocating the intrinsic merit of contributions to an open access infrastructure by software tool
- development, content provision, metadata creation, or the publication of individual articles.

We realize that the process of moving to open access changes the dissemination of knowledge with respect to legal and financial aspects. Our organizations aim to find solutions that support further development of the existing legal and financial frameworks in order to facilitate optimal use and access.



3.2 The ECHO-Initiative

The ECHO (European Cultural Heritage Online) Initiative is one of the first major projects funded by the EU Commission to directly bridge the gap between social sciences and humanities and new information technologies respectively. In its initial phase, sixteen partner institutions from nine European countries including candidate countries are set to integrate content and technology in a pan-European infrastructure adequate to the Internet age. The ECHO consortium has set itself a charter to ensure basic values, goals and restrictions. These general propositions include the free availability of tools and content (in particular European cultural heritage) on the Internet, the support of open standards, measures on long-term archiving and the provision of a common infrastructure.

European Cultural Heritage Online - Statement of Purpose

Motivation

The ECHO initiative has been motivated by the observation that, at present, information relevant to cultural heritage still plays only a marginal role in the Internet: the number one medium for current and future scientific work, communication and general archiving.

Basic idea

The basic idea of the ECHO-initiative therefore is to establish an open-source culture of the public and scholarly exploitation of cultural heritage on the Internet. This idea comprises the promotion of content-driven technology in information management.

Aim

The aim is to create an Agora, a community of producers and users of culturally relevant information, who are willing to freely exchange this in order to build a joint portal and a common infrastructure.

Necessary instruments

To reach this goal it is crucial

- to adopt common standards,
- to establish unified modes of access,
- to develop and disseminate universally applicable tools,
- to engage in complementary support e.g. by building tools for existing content,
- to offer support from an innovation center,
- to stimulate an open, non-commercial exchange of content and tools,
- to set up dedicated working environments.

The ECHO-infrastructure

This infrastructure should allow every archive, library, museum, educational or scholarly institution to make their sources available online with little effort and in a way that guarantees their interoperability with other elements of the European cultural heritage, and to constitute all meaningful links that can be established automatically.

The ECHO-surplus value

Every potential ECHO-Associate will gain a characteristic ECHO-surplus value when entering the Agora by making contents or tools available on the web. The ECHO-surplus value can be achieved by using the possibilities to transform tools developed for particular aspects of cultural heritage into modules of a universal working environment applicable to all pertinent domains of cultural heritage, to enable all possible meaningful links, not just the automatic ones, to launch a self-sustaining dynamics leading to a steady increase of the cultural heritage available on the web, and to the development of ever more sophisticated instruments for its analysis and dissemination, to present content that until now could not be made freely accessible on the web to the scientific and general public, to make computer-assisted tools, hitherto prevented from becoming standard instruments, available to a broad community of users.

The vision

The long-term vision of ECHO is that of an electronic representation of the European cultural heritage on the web which will make it more widely available than ever before in its history and thus strengthen its function as a bond of the European community. In addition, this vision also includes a new perspective on the ways in which electronically represented sources of cultural heritage can be explored from a scholarly point of view, eventually overcoming traditional, medium-based boundaries between disciplines in favour of an overarching study of the underlying cultural worlds. The long-term vision of ECHO finally comprises the expectation that a content-driven innovation of information technology will provide a new driving force for technological development in Europe.

These ambitious goals can only be reached if the ECHO-infrastructure reaches a certain scale in both the Agora dimension and the innovation center dimension, and if bonds with all parallel European initiatives are established. The important fact is, however, not the success of ECHO as a specific project, but the survival and long-term achievement of an open-source culture for cultural heritage on the Web.

Initiators of the ECHO initiative

- *Jürgen Renn*
Max Planck Institute for the History of Science, Berlin
- *Peter Wittenburg*
Max Planck Institute for Psycholinguistics, Nijmegen
- *Sven Strömqvist*
University of Lund, Department of Linguistics
- *Gerd Grasshoff*
University of Bern, Department of the History and Philosophy of Science
- *Paolo Galluzzi*
Institute and Museum of the History of Science, Florence
- *Kostas Gavroglu*
University of Athens, Department of History and Philosophy of Science
- *Maurice Godelier*
Joint Research Unit of the Centre for Scientific Research and School for Advanced Studies in Social Science, Centre de Recherche et de Documentation sur l'Océanie, Paris
- *Elisabeth Kieven*
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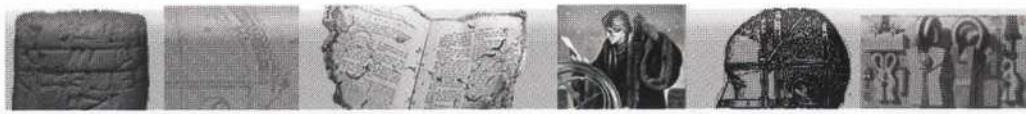
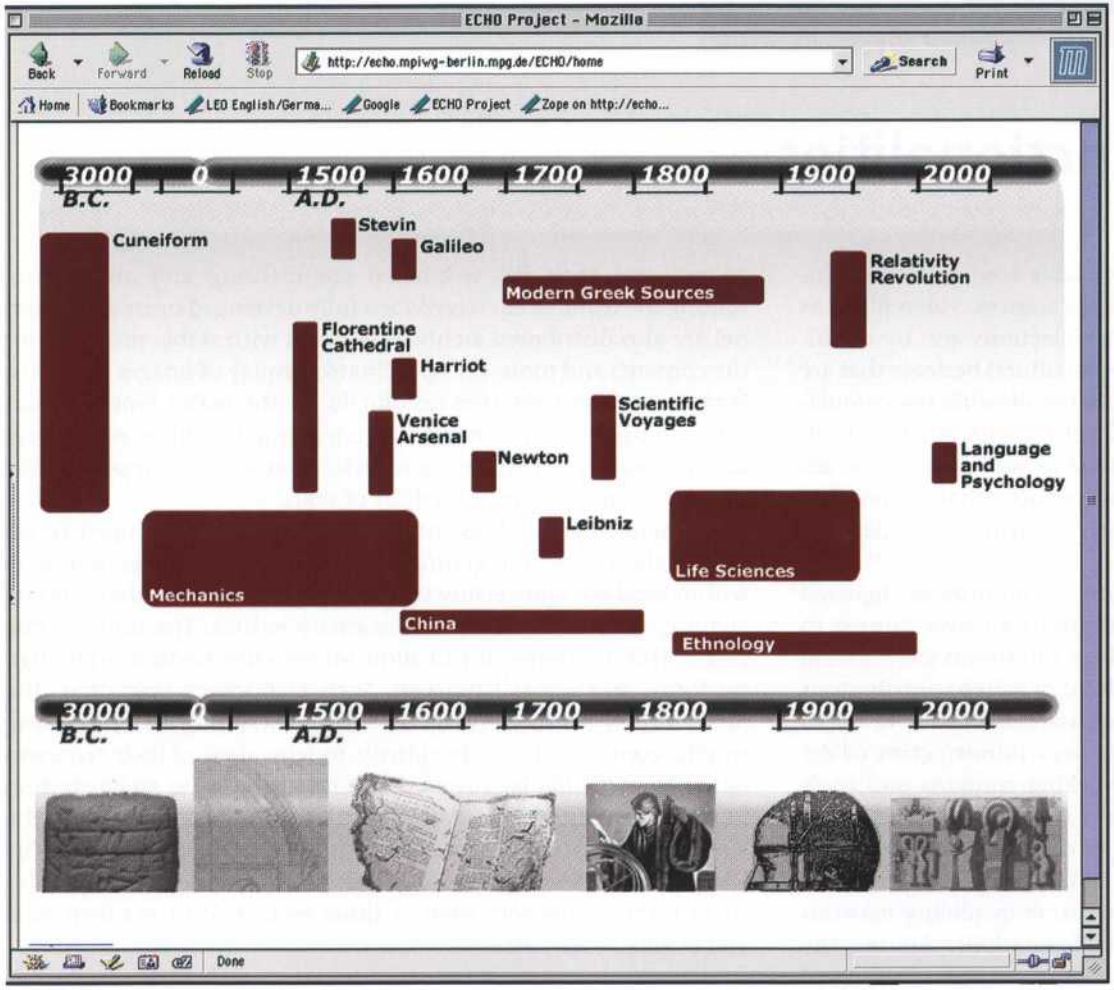
Hungarian Academy of Science, Institute of Ethnology, Budapest
- *Edina Földessy*
Museum of Ethnography, Budapest
- *Michael Rowlands*
University College London, Department of Anthropology
- *Willem Fermont*
The National Museum of Ethnology of the Netherlands, Leiden
- *Barbara Cassin*
Joint Research Unit from the Centre for Scientific Research and University Paris Sorbonne, Centre de Recherches sur la Pensée Antique, Paris
- *Maurice Godelier*
Ecole des Hautes Etudes en Sciences Sociales, Paris

The Timeline





The size of the blocks represents the amount of data assembled. The seed collections presently covered by the project range from Cuneiform to historical sources, from Texts by Galilei, Leibniz and Newton to language and psychology research data, ethnological representations to collections on Relativity Revolutions.

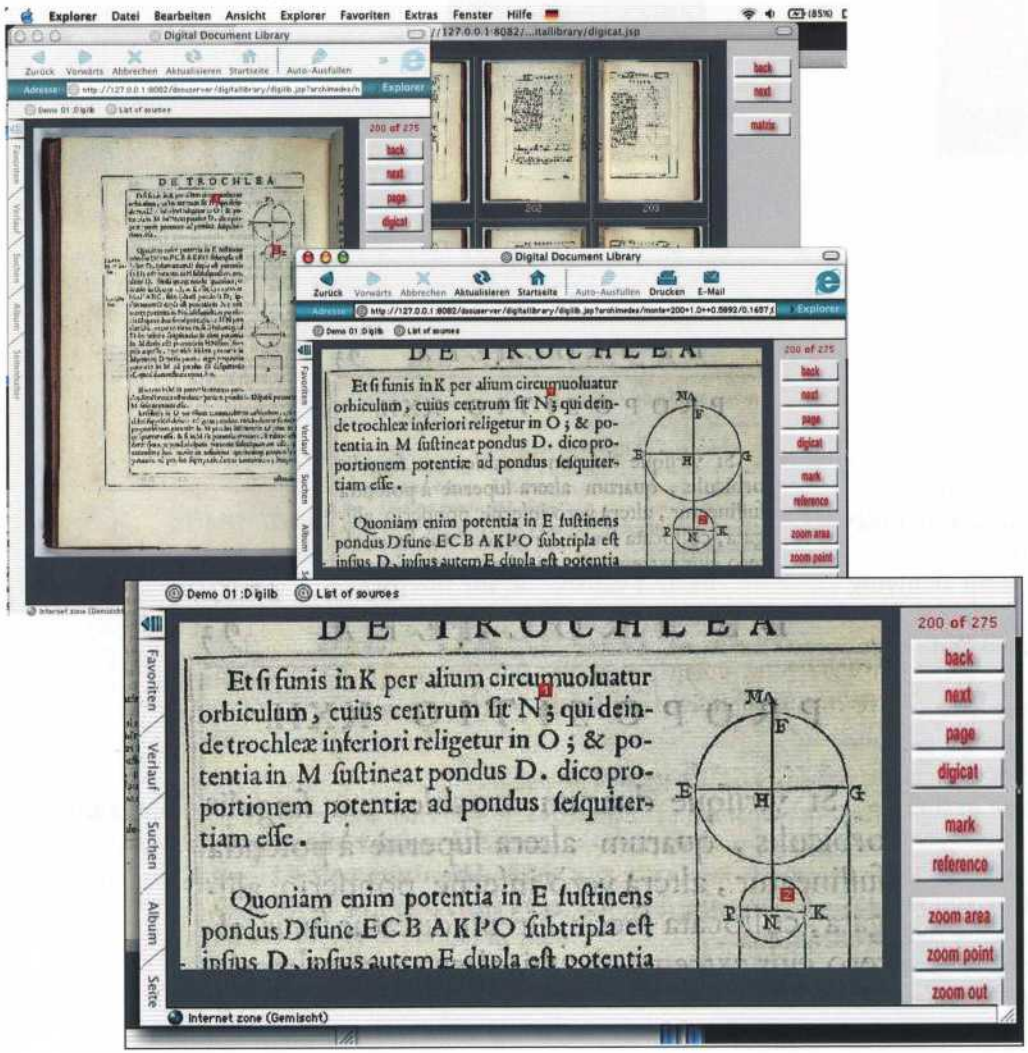
3.3 The Basic Functionalities

The ECHO Initiative has made available seed collections including digitized texts and images of sources, video films, as well as scholarly metadata. Seed collections are, by definition, constituted by digitized collections of cultural heritage that are freely available and sufficiently structured for allowing the cumulative association of further materials and instruments. Such seed collections should, in particular, offer criteria as well as tools for adding further content, ensuring as far as possible that all possible meaningful links with the contents already in existence can be automatically or interactively implemented.

Much of the material now freely available could only be digitized because the ECHO project helped institutions all over Europe to overcome the competence and technology thresholds for entering the Web. Crucial for lowering the threshold of active contributions to a Web of culture was the idea of an open-access kernel. An open-access kernel is constituted by a grid-like basic infrastructure of the Web with distributed, modularly interlocking contents and tools which are both freely available and serve to fulfil the basic needs associated with a digital representation of cultural heritage.

Unlike specifically developed digital library environments, the more universal ECHO environment offers interoperability between corpora and facilities for web-based collaborations. Among the basic functionalities of its open-access kernel are the zooming of images and tools for web-based commenting and annotation. Among the features envisaged for a fully developed open-access kernel are also distributed archival solutions with stable metadata for the contents and tools, the coordinated display of images and texts, language technology, core ontologies for the major types of sources, web-based environments for generating, handling, presenting, and annotating documents, and web-based services supporting the translation and semantic analysis of texts.

The language technology embedded in the existing open-access kernel allows the integration of distributed language resources within local data processing such as morphological analysis and searching, as well as linking to dictionary entries. The fully developed ECHO environment will allow for searches across morphological forms and across languages. Such technology thus offers the precondition for identifying, accessing, extracting and processing specific contents of text documents independent of their representation by particular languages. This may also serve as an illustration for how a content-driven technical innovation can foster the development of fundamentally new ways of semantic linking in the Web. It would be desirable to extend this technology soon to also cover formal languages such as those embodied in mathematical and chemical formulae.



European Cultural Heritage Online (ECHO) - Charter -

Preamble

- ECHO is a collaborative research endeavour that provides active support for scientific and cultural institutions and projects in Europe that hold or enrich cultural heritage through new technologies and media.
- The ECHO Charter aims at defining the criteria for adequate exploitation of the new media's potential for archival preservation, scholarly and educational exploration, as well as public distribution of the shared cultural heritage of mankind.

ECHO values

- ECHO shall undertake all efforts to make cultural heritage accessible and understandable to the general public across national, cultural, and linguistic barriers.
- All ECHO content shall be made freely available on the Internet in the most technically adequate and feasible way possible.
- All ECHO tools shall be and remain freely available on the Internet.
- All standards that are used shall be fully documented in a freely accessible way.

ECHO goals

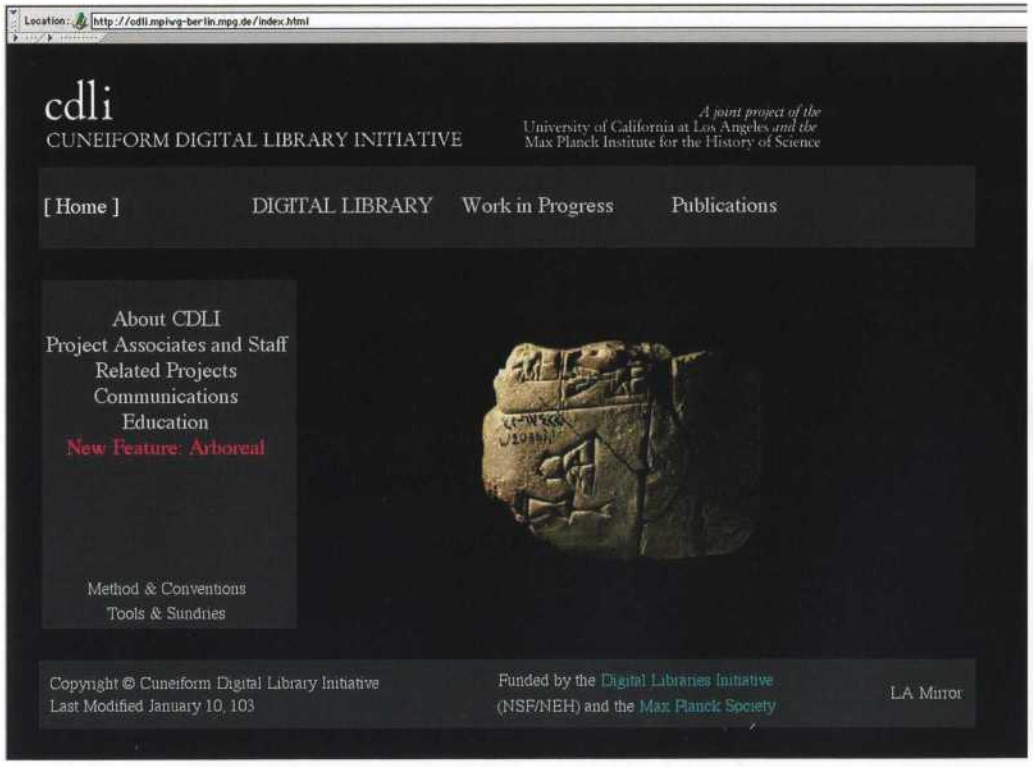
- ECHO shall support the preservation, exploration, and dissimination of content belonging to shared cultural heritage.
- ECHO shall provide the tools for accessing cultural heritage according to its context and semantic structures.
- ECHO shall take all measures to assure long-term archiving and accessibility for the content it includes.
- ECHO shall assure that all content is integrated and accessible through a common portal.
- ECHO shall make every effort to establish that interconnections within its content technically are possible.
- ECHO shall support existing open standards and their implementation, and, whenever appropriate, engage in the development of new standards.
- ECHO shall work towards the creation of a permanent network infrastructure that will provide upgrading and maintenance of the tools and outcome developed during the project.
- ECHO will actively support efforts to disseminate tools and outcome to both public and private content providers.

ECHO restrictions

- ECHO excludes any violation of intellectual property or person's rights.
- ECHO does not support work on content which, due to property right restrictions, cannot be made freely a vailable on the Internet.
- ECHO does not adopt standards without providing the tools for their implementation.
- ECHO does not develop tools without using them to make cultural heritage accessible.

The Agora community

- All content, tools, and standards as well as all projects that comply with the above values, goals, and restrictions are viable for partcipation in the ECHO Agora.



„The long-term vision of ECHO is that of an electronic representation of the European cultural heritage on the web which will make it more widely available than ever before in its history …"

3.4 The Max Planck Strategy

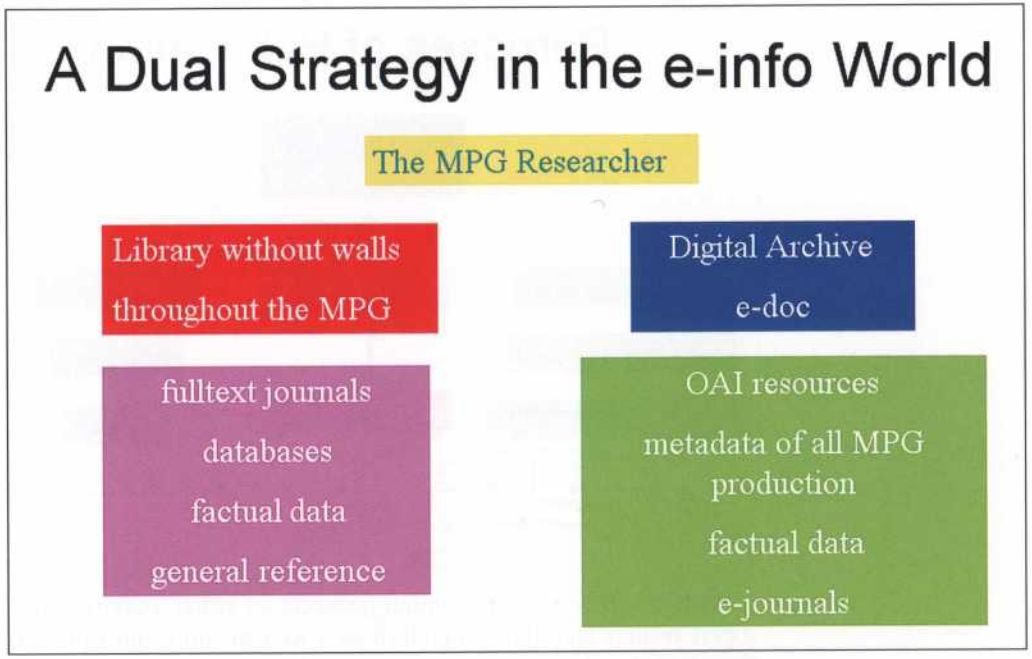
MAX-PLANCK-GESELLSCHAFT

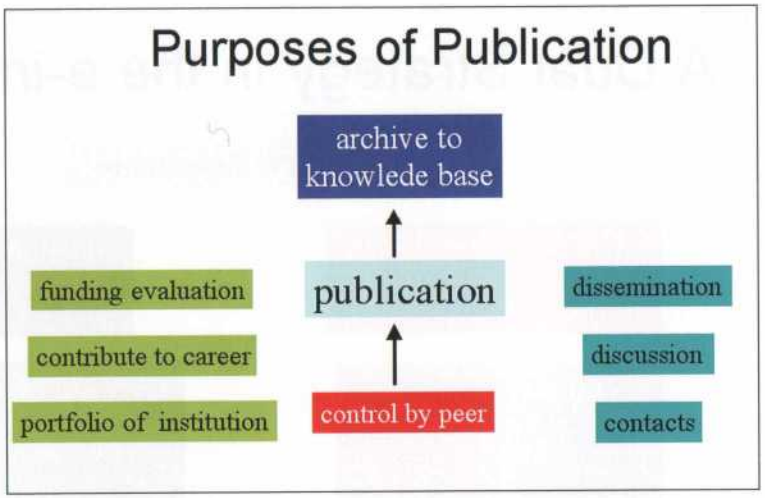
The Max Planck Society is a research organisation active in almost all fields of science and in the humanities. Its scientific communities are thus very diverse in their needs and expectations towards dissemination systems. Some communities are far advanced in using the Internet for publishing and conducting scientific discourse. Mathematics, computer science, astronomy and physics operate intensely with Internet resources but keep some conventional publication channels. The life sciences use the Internet for global cooperation, increasingly also for publication of primary research results and for their scientific quality management. Traditional publication channels for archival and interdisciplinary communication remain dominant. In the humanities the traditional channels of scientific discourse through books and journals still prevails but a rapidly growing community develops high-end digital systems for representing primary sources of text, artefacts and other objects in high quality with editorial material (transcripts, language corpora) and with multiple links to related resources.

In view of the varying time scales of the transition from print to the new media, the Max Planck Society adopted at an early stage a dual strategy towards the transfer of the scientific process to the Internet age. The dual strategy aims at versatile access to scientific primary and secondary information for all scientists of the Society

without the traditional limitations of local physical libraries. The dual strategy consists of a more consumption-oriented and a more production-oriented wing, represented by hosting traditional and commercial electronic information sources, on the one hand, and by building up innovative multimedia dissemination systems, on the other. Taken together, this system represents a virtual library without walls of the entire Max Planck Society. Along the consumption-oriented strategy, this virtual library will hold traditional journals in electronic form, databases for information retrieval (the so-called e-lib module). Along the production-oriented strategy, the virtual library will assemble primary resource collections, electronic journals edited by communities organised by members of the society, the archives of the society and an institutional repository of the scientific achievements of the society (the so-called e-doc module). The latter module is characterised by a high degree of internal linking between related resources, by an interactive character and by high-end digital representations of objects and processes of scientific relevance (paintings, plans, video documents, observation data).

The realisation of the library without walls of the Max Planck Society will be modularly encompassing existing technologies but will also require the development of novel technologies, both on the level of the metastructure of the system and for individual





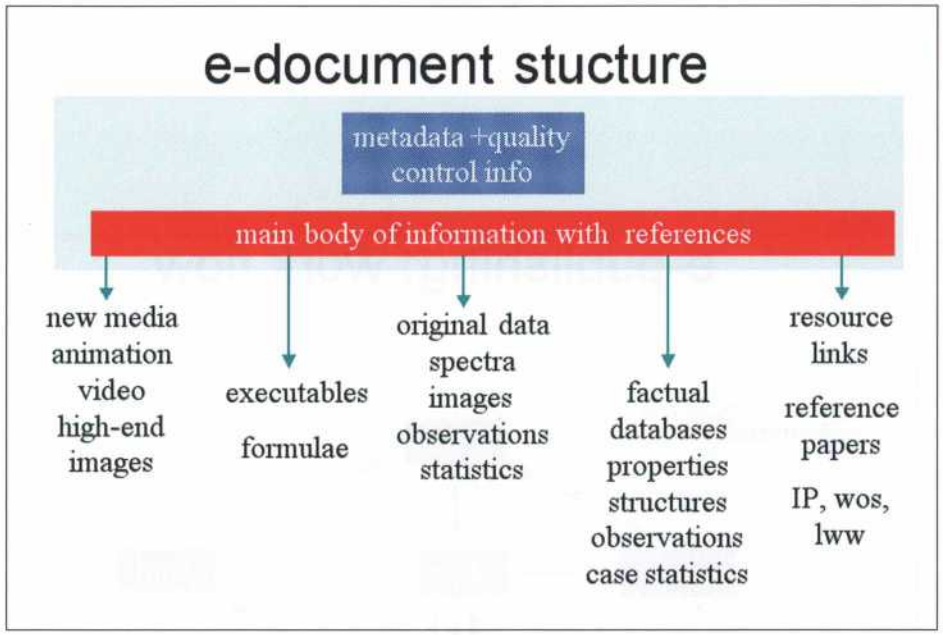
collections. Interfaces to similar projects of other organisations (open archive standard), digital objects locators and multi-institutional backend long-term archival and backup systems will be required to ensure the sustainable growth and the reliability known so far from physical libraries.

The installation of such a system that conveniently enables the generation of peer-reviewed electronic journals will put substantial pressure on the commercial and institutional players of the traditional system based on exclusive licensing to open their products to public access. The Max Planck Society aims for a co-operation and an integration of the two wings of the strategy, provided that all stake holders of the process agree to the open access approach.

The library without walls will, in the future, provide a key resource for intelligent ways of scientific data mining. With the ever increasing complexity of research fields and with the rapid growth of knowledge in the fundamental sciences that are needed for the development of technological applications we shall see the evolution of data mining tools that are far more powerful than present search engines in finding and analysing relations in the content of the information. Today such relations are commonly used only with regard to metadata in a formal sense (e.g. citations).

The modularity of the library without walls makes it possible for other institutions with comparable needs to share the achievements of the developments within the Max Planck Society and vice-versa. It furthermore ensures that the library without walls will become another important corner stone of a future Web of Culture and Science.

3.5 The Berlin Road Map towards Open Access

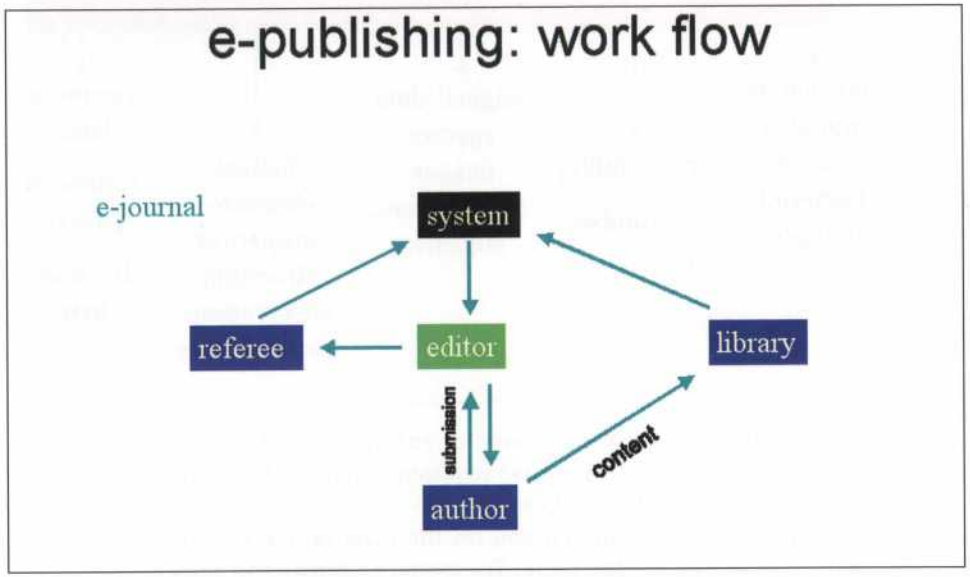


The Max Planck Society has taken a leading role in Europe in promoting the change of the scientific dissemination system from a closed-user group structure into a resource with open access to everybody. This is based upon the principle of governance of transparency of publicly-funded research and upon the identification of the function of fundamental scientific and cultural knowledge for the creation of technological and social evolution forming the basis of sustainable development.

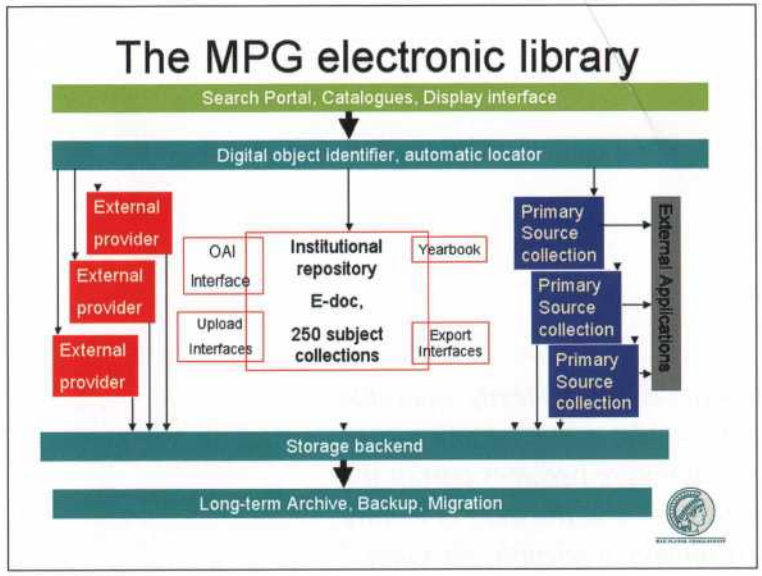
This process is being pursued in union with similar movements known as the Budapest process and the Bethesda process in the US. The current European Berlin process is, however, like the preceding activities, only useful if it creates practical consequences leading to the implementation of open access structures in the scientific discovery process. These structures should be of international format to represent the global nature of the scientific discovery process.

In recognition of this, signatories of the Berlin Declaration are expected to define a road map towards implementation of open access. This map has naturally two tracks pointing towards the inner structures of an institution and towards the outside, namely the other co-signatories of the declaration. An international follow-up conference in 2004 will be staged together with the US American Bethesda initiative to achieve the coordination process and to look into the progress made so far. To this end elements of the road map for the Max Planck Society may serve as examples for the other signatories of possible measures and requirements to achieve the core demands of the Berlin Declaration.

The first priority on the internal and on the external track is the creation of awareness for the issue. The average scholar and their decision makers were until now and still are barely aware of the information revolution. For this reason, on the internal track a series of seminars and presentations to the researchers within the Max Planck Society will be conducted to create an information base amongst those using and producing the relevant content. On the outside track, talks about the institutional consequences, about issues of quality control, the guaranteed transfer of the peer reviewing process and about the recognition of open access publication in career evaluations will be initiated.



The second priority is to create practical experience with open access publication. On the internal track the necessary electronic library and publishing toolkits need to be setup and provide open-source to all who are interested. To this end the Max Planck Society operates the Heinz Nixdorf Center for Information Management providing the design and partly the development capacity for the necessary infrastructure. An alliance with an institutional provider and hosting agent (the FIZ Karlsruhe) is being implemented to support and consolidate the initial efforts emerging from within the Society to build up an electronic document server, a virtual library, and "living reviews," as well as other electronic journal initiatives. The administrative structures to support and steer the development on a Society level have been created. On the outside track a national network of institutions from the list of signatories of the Berlin Declaration will be put together to share and complement the systemic developments of the Max Planck Society. The coordinating function of the Federal Ministry of Research and Education is needed here. Negotiations have started to ensure the active participation of the national political structures. The earlier the institutional system with its facets becomes operational, the earlier the exemplary effect of convincing other players to convert to open access will operate. A further priority on the internal track is to redirect the financial streams within the Max Planck Society to support the development and operation of the central electronic library. This will be done be re-focusing distributed funds used before for local content acquisition and by the allocation of fresh money for the development and operation of the central structures. External funding for development projects will be sought, like the support from the Heinz Nixdorf Foundation that was instrumental for initiating the Max Planck Society's lead into the electronic information domain. Additional significant funds for supporting upfront publication costs (page charges) in external open access media for the individual researcher will be available from 2005



for at least a transitory period to encourage the acceptance of the new media. On the external track negotiations with German funding agencies will be conducted to support publications in open access media as an integral part of research project costs.

A pressing but complex priority is the legal issue of open access. The legal base needs to be created for granting the copyright on open access material to the public. In a first step a legal expertise is required to identify potential violations of the present copyright legislation. From there, the necessary modifications will have to be brought to the political institutions. On the internal track the MPI for International and Private Law holds excellent expertise on these issues and will consult with the Max Planck Society. One particular issue is the adaptation of the work contracts of all co-workers of the Max Planck Society to reinforce the practice of granting exclusive copyright on publications to third parties only with tight temporal restrictions. It is obvious that on the outside track a harmonisation of these issues on the national and European level will be required. For these modifications a significant time allocation will be required.

The Max Planck Society seeks to internationalize its efforts in open access. To achieve a sufficient impact on current publishers to change over to a meaningful form of open access, it is essential that the scientific community represented by eminent research organizations express their needs and desires unanimously. It would be preferable to change a large number of existing journal activities with their functioning reviewing structures into the new system rather than to erect parallel activities with overlapping and competing tasks. The group of signatory institutions of the Berlin Declaration should thus try to adjust their political targets with other major open access initiatives to stand together as a network of initiatives. The Max Planck Society will use its contacts to foster a process of forming an alliance for open access.

Efforts will be conducted on the external track to implement a standing conference at a working level between the signatories of the Berlin Declaration. This forum should meet regularly and prepare its harmonisation efforts. It should further watch the progress in implementation and alert the leadership when serious obstacles occur. Finally, it should further develop the process and co-ordinate the implementation of new concepts that are bound to result from the roll out of an initial critical nucleus of open-access media. The measures indicated are expected to be effective within the next three years, many of them requiring only the action of internal bodies within the next eighteen month.

„Once one is committed to the view that science is not so clearly separable from the human sciences … or from other humanist enterprises, history of science begins to blur with social history. Literature becomes part of the history of science. Science is reflected in literature. And the tools of literary criticism become instruments in the understanding of scientific discourse."

George Levine, linguist