

Neural networks in the human brain

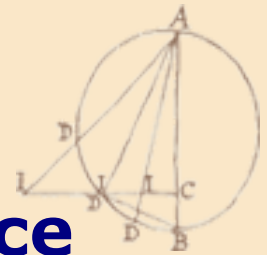
## eScience as Challenge for Research and Libraries on the Way to an Epistemic Web

International Conference on "Science 2.0"

Urs Schoepflin  
Director, Research Library  
Max Planck Institute  
for the History of Science

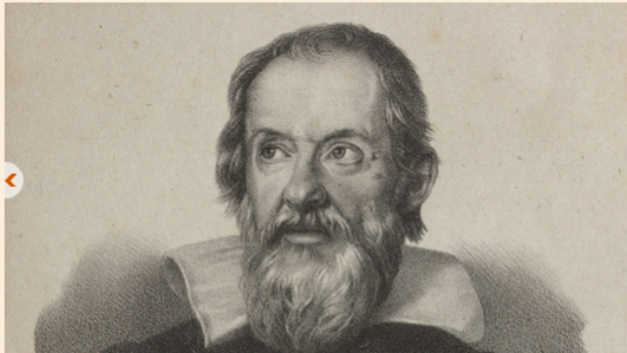
Hamburg, March 26, 2014

# Max Planck Institute for the History of Science



**MAX PLANCK INSTITUTE FOR THE HISTORY OF SCIENCE**  
Max-Planck-Institut für Wissenschaftsgeschichte

Institute Staff Research Resources News Deutsch



February 10, 2014 34

Current Research Topic  
**Galileo's Laboratory of Ideas**

New studies on Galileo Galilei carried out at the MPIWG reveal the role played by practical knowledge in the seventeenth century's Scientific Revolution.

[Read more](#)  
[Research Topic Archive](#)

**About the MPIWG**

Founded in 1994, the MPIWG in Berlin is one of the more than eighty research institutes administered by the Max Planck Society. It is dedicated to the study of the history of science and aims to understand scientific thinking and practice as historical phenomena. Researchers pursue an historical epistemology in their studies of how new categories of thought, proof, and experience have emerged. [More](#)

**Projects and Sources**

Research at the MPIWG is carried out in individual and collaborative projects. To browse through the projects, use the keyword index of the institute. [More](#)

The MPIWG is an advocate of open access to scholarly knowledge and is committed to making sources in the history of science available online. [More](#)

**News** [More](#)

Lorraine Daston, Executive Director at the MPIWG, is interviewed by Klaus Taschwer about new ways of reading. [Read More](#)


Memorandum on the Advancement of Digital Humanities published in Berlin. [Press release and download of the memorandum](#) (in German)

**New Articles and Preprints** [More](#)

Bray, F. (2013). Fruchtbarkeitsfabeln in China: medizinische Fortpflanzungsgeschichte(n) in der späten Kaiserzeit. In S. Zieliński, & E. Fülus (Eds.), *Variantologie: zur Tiefenzeit der Beziehungen zwischen Kunst, Wissenschaften & Technik* (pp. 68-92). Berlin: Kulturverlag Kadmos. [More](#)

Dupré, S. (2013). The transnational Galileo: a telescopic view from somewhere. *Nuncius*, 28(2), 465-476. [More](#)

**New Books** [More](#)



**Servicebox** [More](#)

Quickfinder  [Search Website](#)

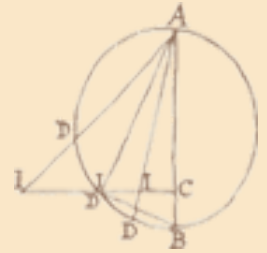
[Search Sources](#)

Research Events Jobs Overview

MPIWG website,  
March 2014

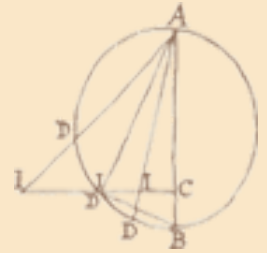
Urs Schoepflin, Max Planck Institute for the History of Science, March 26, 2014





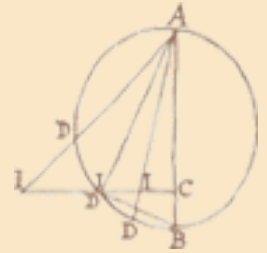
**These are the answers.**

**But what was the question?**



# Overview

- Looking back: Where are we?
- The Scholarly Perspective
- Research Challenges
- Conventional Vision
- Expansion of Knowledge and its Fragmentation
- Alternative Vision
- Open Access
- Dynamic Documents
- Outlook: Further Challenges



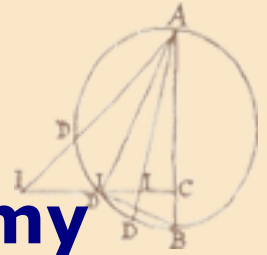
# Challenges of the Web for Research



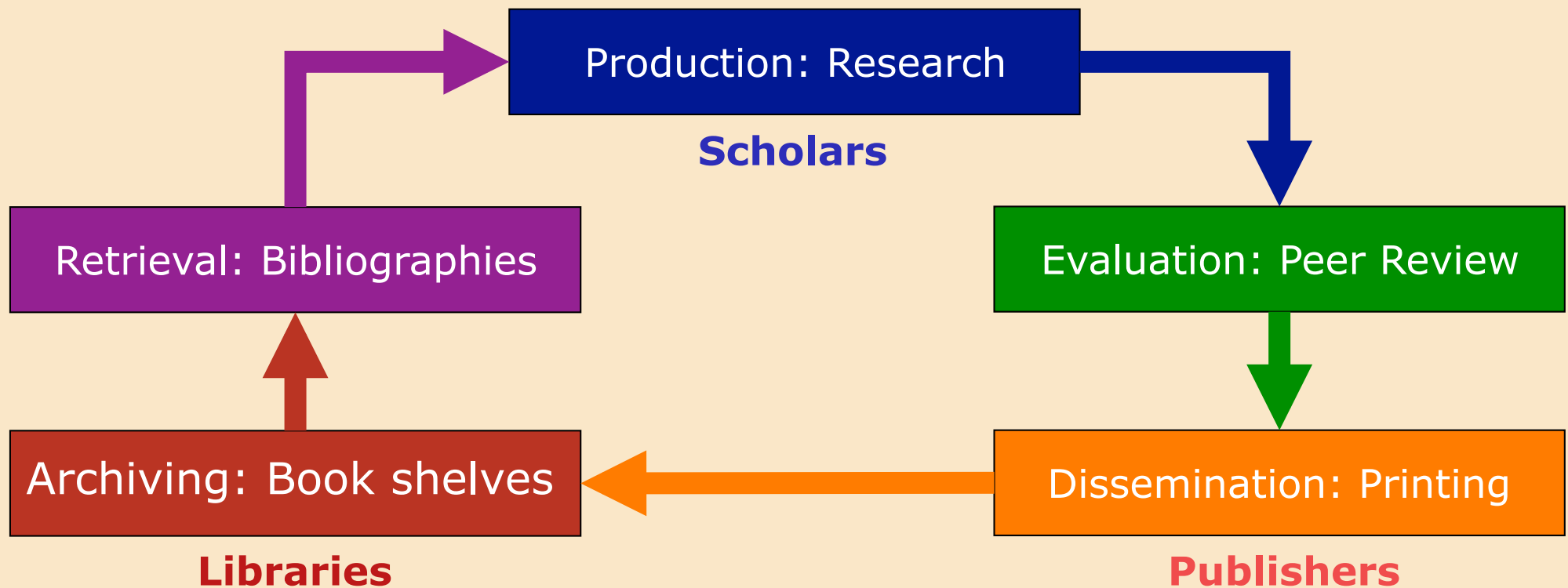
Heading for new shores...

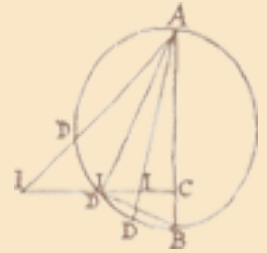
- Development of knowledge
- Collective creation of knowledge in the sciences and humanities
- Continuous transformation and renewal
- External representations of common knowledge
- Confrontation with the experiences of traditional media
- Unsufficient exploitation of the potential of the new media for research





# Conventional Vision of the Knowledge Economy





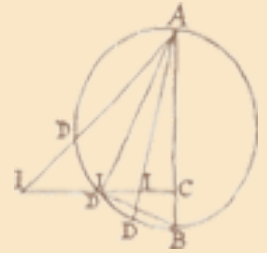
# Traditional Knowledge Economy



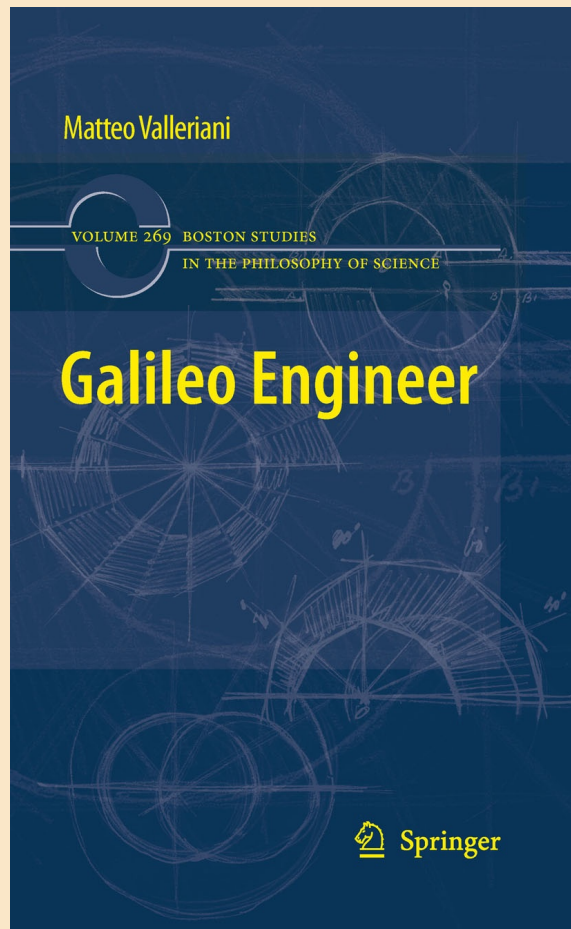
- Separation of research and dissemination
- Data are confined in static representations
- Only selective representations of research results
- „Information-Hinterland“

Research project on Intuitive Physics



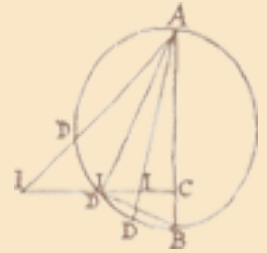


# Growth of Knowledge and Fragmentation

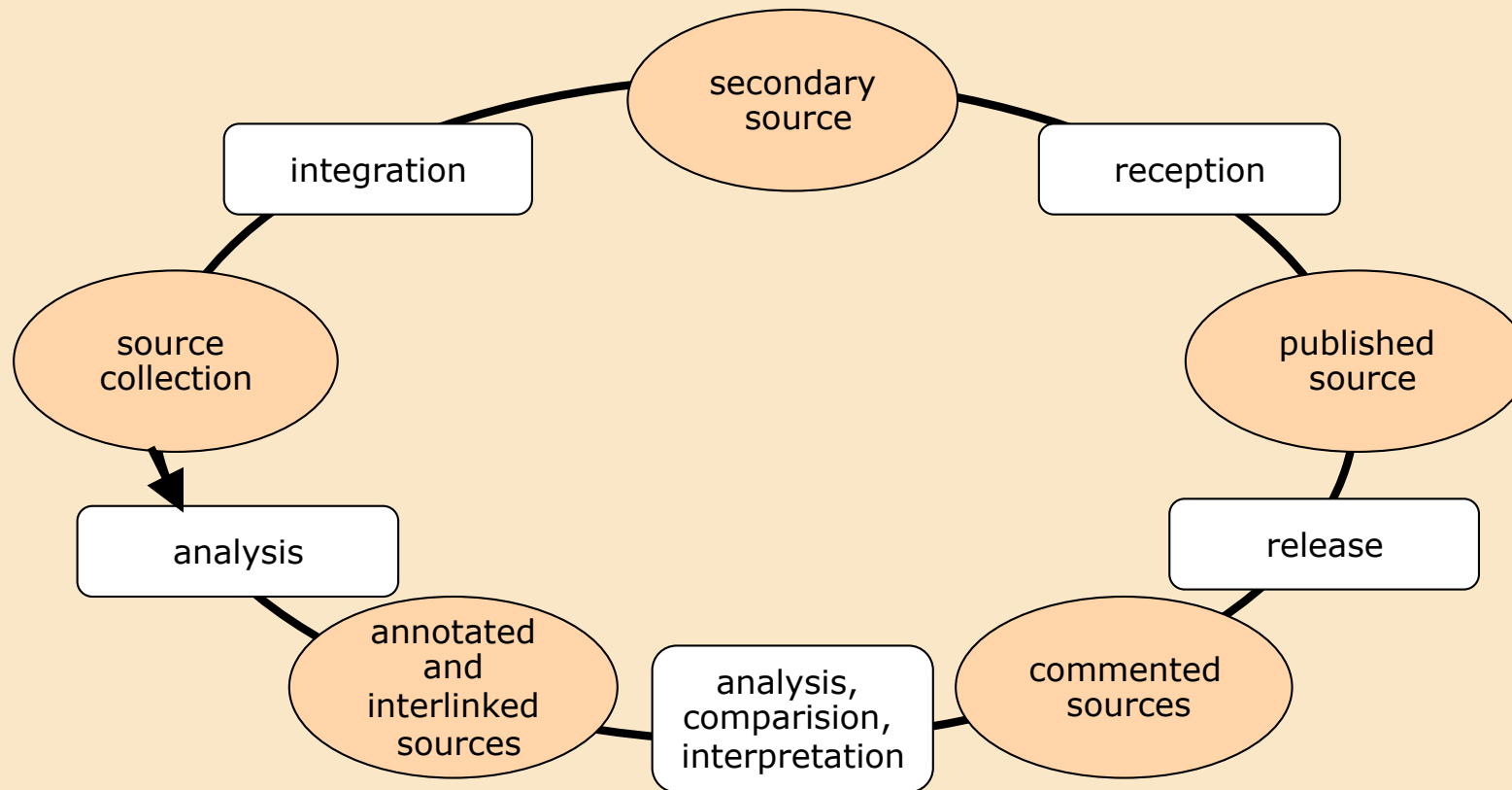


- “Information Explosion” as a result of fragmentation of bodies of knowledge due to their unsufficient integration
- Traditional publication system is fostering fragmentation of knowledge representations
- Collectively created knowledge is turned into private ownership
- Reflected by the shape of academic careers

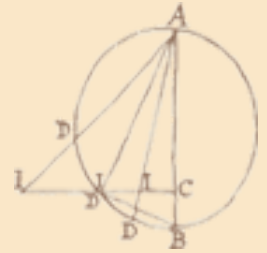
Cover of  
M. Valleriani, Galileo Engineer, 2010



# Alternative Vision of the Knowledge Cycle



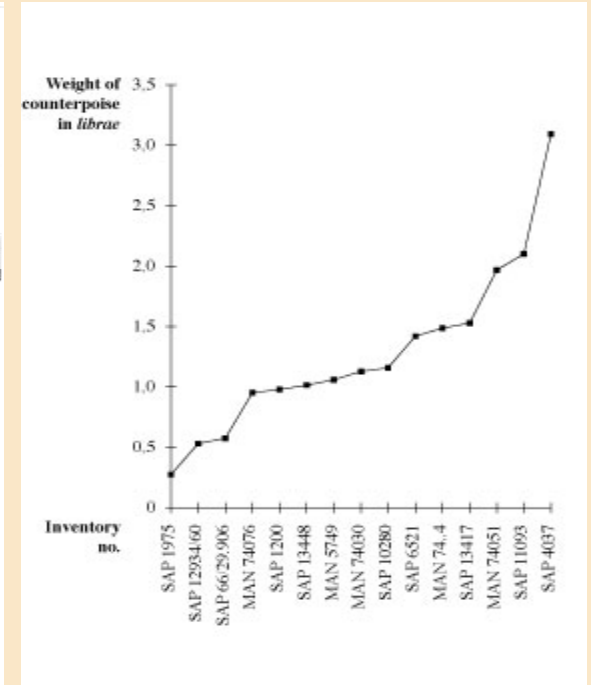
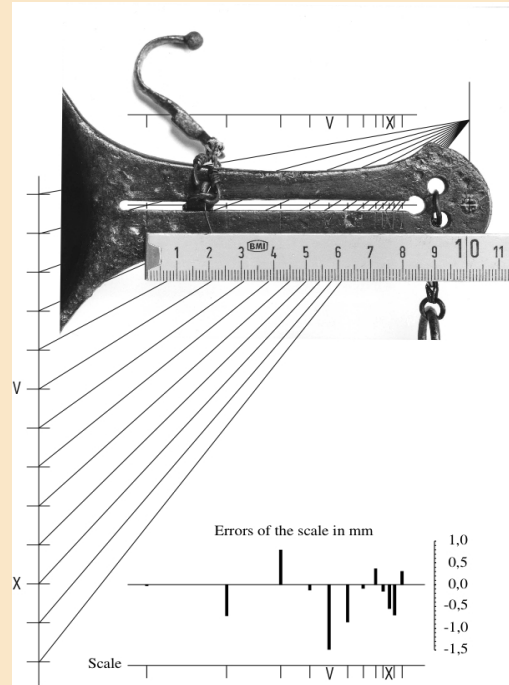
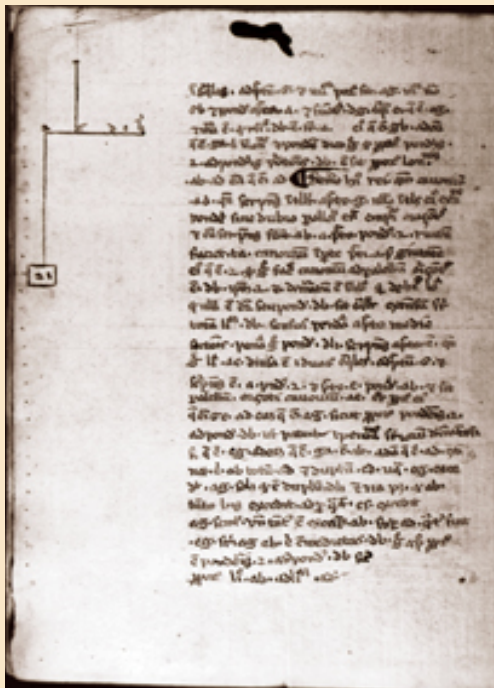
- Integration of research, dissemination, and reception
- Research results become immediately basis for new research
- Dynamic representation of knowledge

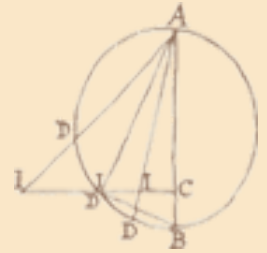


# Precondition: Open Access

- Arguments for open access
- Comprehensive representation of the „Information-Hinterland“

Different types of scholarly data





## Open Access Policy

**“Our mission of disseminating knowledge is only half complete if the information is not made widely and readily available to society.**

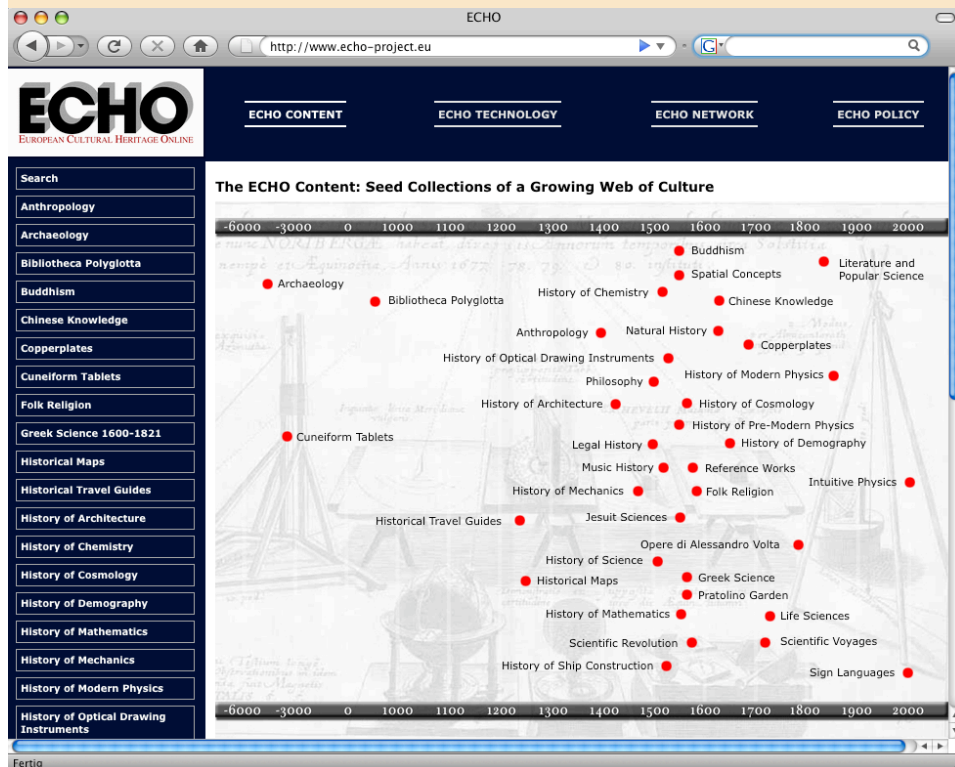
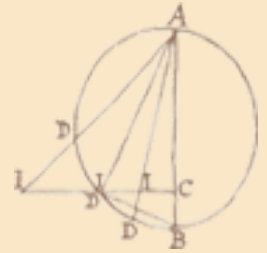
New possibilities of knowledge dissemination not only through the classical form but also and increasingly through the open access paradigm via the Internet have to be supported.

We define open access as a comprehensive source of human knowledge and cultural heritage that has been approved by the scientific community.”

Max Planck Society,  
“Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities”, 2003

# Towards an Epistemic Web: Open Access Research Environment „ECHO – Cultural Heritage Online“

<http://echo.mpiwg-berlin.mpg.de>

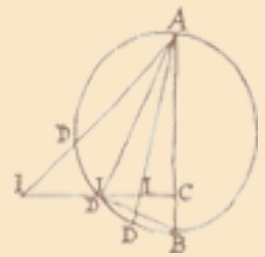


- Representations of cultural heritage made openly available:
  - ca. 890.000 high resolution images;  
9 multilingual dictionaries;  
ca. 57.500 structured xml-filltext transcriptions;  
databases with more than 250.000 items;  
240 video sequences
- Technology development:
  - development of open source tools (XML-based language technology for annotation, morphological analysis, search, and dictionary access, image server, annotation tools for multimedia)

- Open Access Policy
- Network of 170 content providers from 24 countries worldwide

Urs Schoepflin, Max Planck Institute for the History of Science, March 26, 2014





# Towards an Epistemic Web: Online Availability of Sources

- Transparent research process by immediate verification of scholarly interpretation
- Creating a new situation for peer reviewing

CDLJ 2002:1 - Mozilla

http://cdli.ucla.edu/pubs/cdlj/2002/cdlj2002/

Cuneiform Digital Library Journal  
2002:1  
ISSN 1540-8770  
© Cuneiform Digital Library Initiative

The Ur III Collection of the CMAA

Robert K. Englund < englund@ucla.edu >  
University of California, Los Angeles

Keywords  
Ur III, Umma, Drehem, labor, animals

This material is based upon work supported by the  
National Science Foundation under Grant No. 0000629.

§0. Since 1985, the California Museum of Ancient Art, Los Angeles (Director: Jerome Berman), has added to its collection of Babylonian antiquities a number of Ur III documents, of which one was edited by Daniel Foxvog in 1986 ("A Summary of Non-Sealed Labor Assignments from Umma," *ASJ* 8, pp. 59-69). Fifteen of the remaining sixteen texts (excluding for a fuller philological treatment by M. Widell in this journal the last CMAA 015-C0019 document, a legal proceeding) are offered below with short commentaries and computer-assisted tablet copies. For image documentation, references are made within the individual entries to the texts' corresponding pages within the data set of the CDLI. The catalogue entries below consist of text numbers, dates (regnal year / month / day), provenience, and measurements height x width x thickness, in millimeters. Numbers 1-13 were a gift of Dr. and Mrs. Julius Winer, number 14 is a loan by Russ Kino, and no. 15 a gift of Russ and Ivonne Kino.

§1. No. 1 = CMAA 002-C0005  
Shulgi 47 / 00 / 25, from Drehem ?  
30x27x13mm  
Download vector graphic copy of this tablet

cdli

CDLJ 2002/1, no. 1  
Record 1 of 1 records found

Access System  
Information  
Back to Search Page  
Copyright

Primary Publication: CDLJ 2002/1, no. 1, Englund, Robert K., 2002  
Collection: California Museum of Ancient Art, Los Angeles, California, USA  
Museum no.: CMAA 002-C0005  
CDLI no.: P212341  
Provenience: Drehem ?  
Genre: Administrative  
Period: Ur III  
Measurements (mm): 30x27x13

Download Full CDLI Files

Web Site go

View full catalogue entry

Obv.  
1. 4(disz) gu4 4(disz) ab2  
2. e2 muhaldim  
3. u4 2(u) 5(disz)-kam  
4. zi-ga  
5. ur#-(d)en-lil2-la2  
Rev.  
n lines broken  
blank  
1. mu us2-sa ki-masz{ki} ba-hul

Please report any errors or other problems, and suggestions for improvement to: [cdli@ucla.edu](mailto:cdli@ucla.edu)

http://cdli.ucla.edu/dl/photo/P212341.jpg

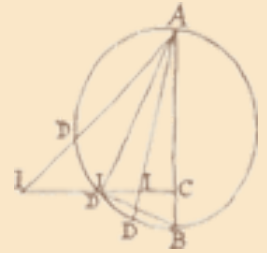
Cuneiform Digital Library Initiative: Open access journal with links to scholarly data and primary sources  
(<http://www.cdli.ucla.edu/>)

Urs Schoepflin, Max Planck Institute for the History of Science, March 26, 2014

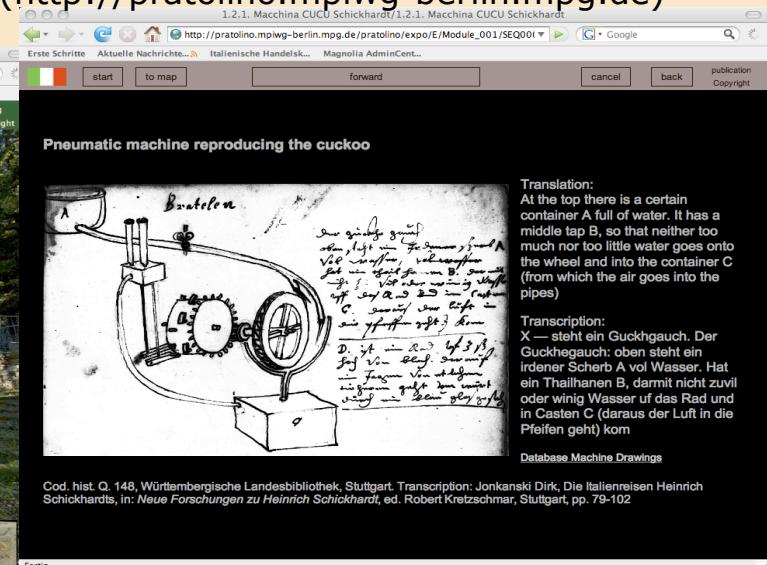
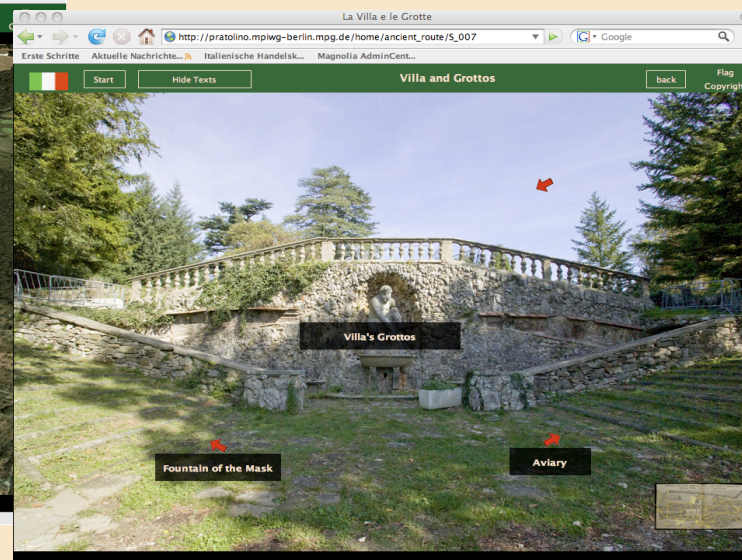
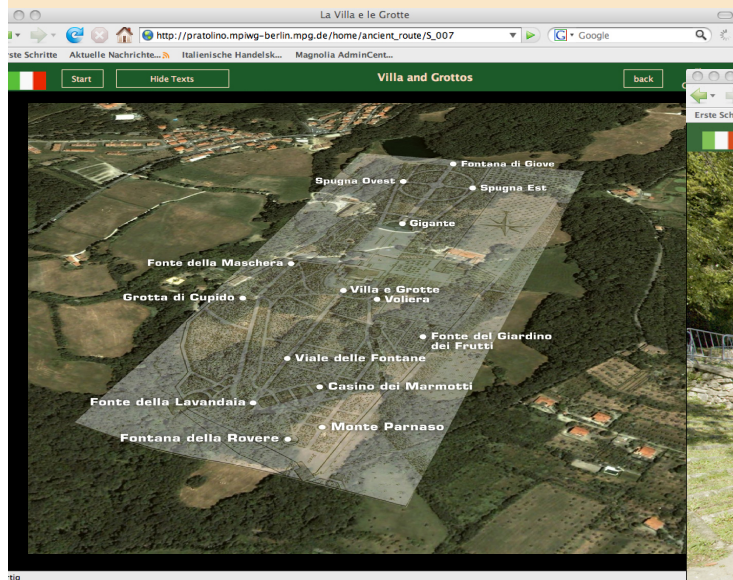


# Towards an Epistemic Web: Dynamic Representation of Knowledge

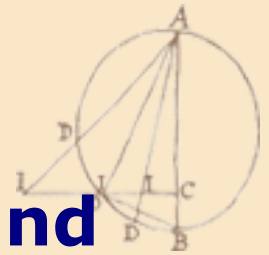
- Transcend static representations of knowledge
- Structural correspondence between content and representation
- Development of tools for analysis and interpretation of so far isolated data collections



Creating virtual knowledge spaces:  
"Pratolino: The History of Science in a Garden"  
(<http://pratolino.mpiwg-berlin.mpg.de>)



Urs Schoepflin, Max Planck Institute for the History of Science, March 26, 2014



# Overcoming the Separation of Digital Object und Metadata in an Epistemic Web

- Current situation is result of traditional concepts, e.g. for digital libraries
- Enhancement: Metadata become research data
- Integration of analytic (linguistic) tools into editing workflows & research scenarios

ECHO Project - Mozilla

http://nausikaa2.mpiwg-berlin.mpg.de/cgi-bin/toc/toc.x.cgi?dir=schre\_qiqit\_X03\_zh\_1627

**ECHO**

Schreck, Johann Terrenz  
Yuanxi Qiqi Tushuo Luzui 1627

author index ◀ 263 / 404 ▶ 263 show/hide x

Show amount: 48 cols: 3 change

Show thumbnail group no.: 1 2 3 4 5 6 7 8 9

241 242 243

244 245 246

第三圖并圖說

說

先為大平車，下有活安長輓木如a。車前端兩旁安有斜柱，上有軸，於其前再為兩車，各如其製，如、如o。但其兩空車，用時暫妮不動待載重之車至近，然後

字典 Click on any character. + ?

平 píng

Exhalation 于 separating 八. (形) even, level, flat (形) peaceful (動) cify ⇔ 水平, 北平, 公平, 公平, 地平線, 生平, 和平 平安 píngān (形) peaceful, safe 平常 píngcháng (形) common 平等 píngděng (形) equal 平定 píngdìng (動) stabilize 平凡 píngfán (形) ordinary 平反 píngfǎn (動) reverse a sentence, rehabilitate, redress 平方 píngfāng (形) square: 平方公尺 圖 square meter: 平方 [普] square meter 平衡 pínghéng (形) equilibrium, ance

translation

Section 61: There are two objects. Their weights are known, and the ratio of their volumes is known (also). Now find the ratio of their inherent heaviness. For example, (the ratio of) the two weights a to e is six to four, (and) the ratio of their volumes is three to one. Find the ratio of silver to gold. The method says: use cross multiplication to multiply the two known ratios, so the ratio of two numbers is the ratio of the inherent heaviness. Six multiplied by one is six, and four multiplied by three is twelve. Therefore, the ratio of six to twelve is obtained; reduce it, is one to a half. So compare the weight of silver object with the gold object, the difference is naturally a half.

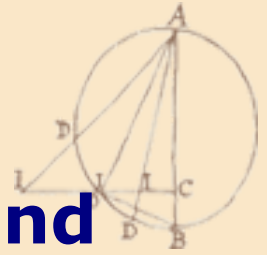
圖三第

說

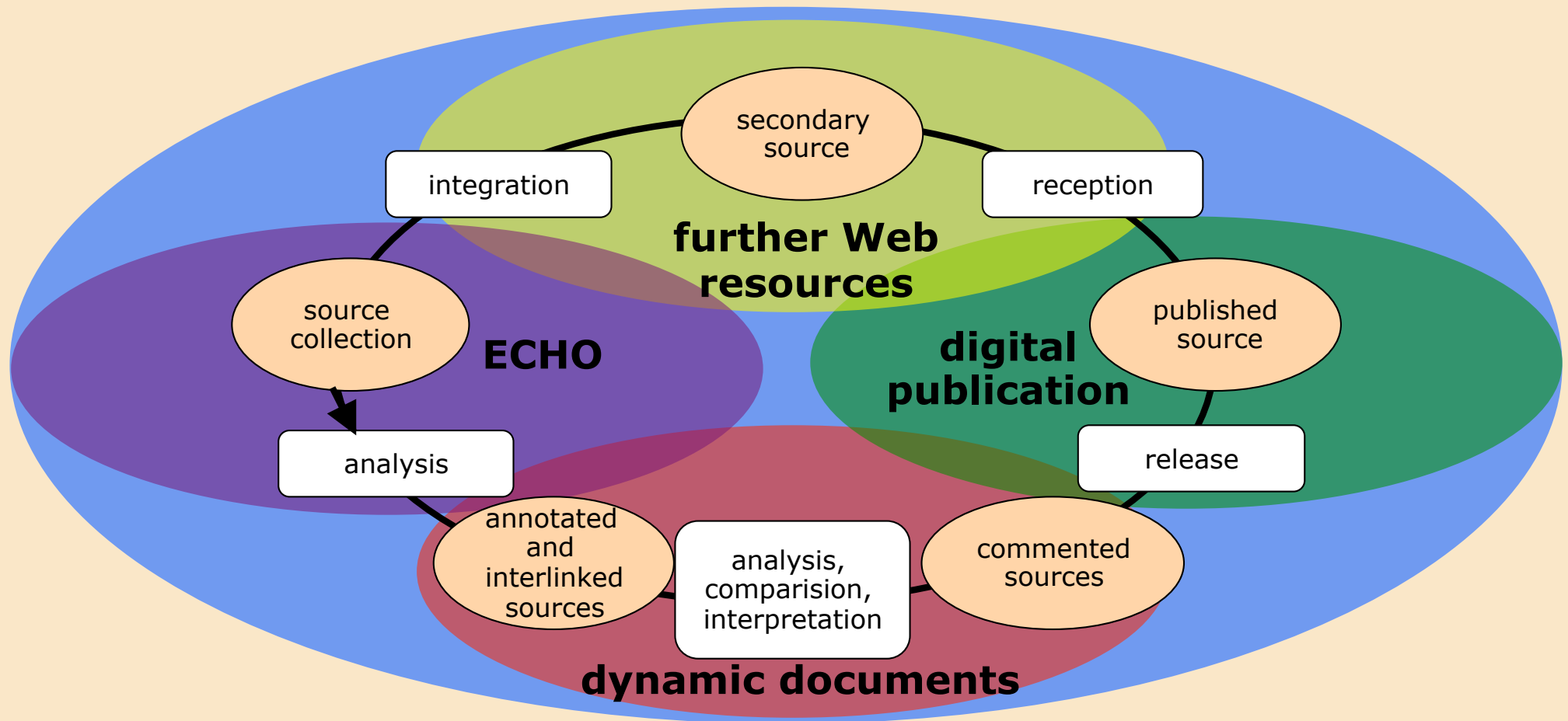
先為大平車，下有活安長輓木如a。車前端兩旁安有斜柱，上有軸，於其前再為兩車，各如其製，如、如o。但其兩空車，用時暫妮不動待載重之車至近，然後

comment

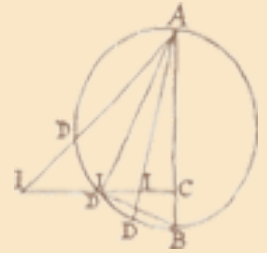
Section 61: \*How to calculate the proportion of specific gravity and volume between two objects and their weight\*  
\*\*Commentary: WT's problem seems to be another variation of Problem IX (Proposition XXII) of Stevin's book (pp.479-481). WT did not mention gold or silver too. It is possible for WT to make a variation on the basis of Problem IX (Proposition XXII) of Stevin's book (pp.479-481).



# Overcoming the Separation of Digital Object und Metadata in an Epistemic Web

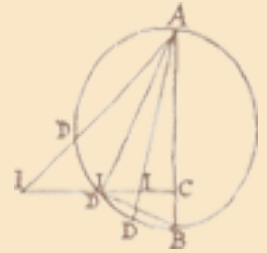






## Outlook to Further Challenges

- Quality control of non-finite documents
- Trusted content
- Recognition and credits
- Curation of living documents, metadata, and primary data
- Long-term availability
- Management of flexible collections
- New skills and qualifications for librarians
- Towards a vision of new models of research libraries



**Thank you for your attention!**

Urs Schoepflin

Mail: [schoepfl@mpiwg-berlin.mpg.de](mailto:schoepfl@mpiwg-berlin.mpg.de)

Max Planck Institute for the History of Science

Web: <http://www.mpiwg-berlin.mpg.de>

<http://echo.mpiwg-berlin.mpg.de>