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INTEGRATED INFORMATION

International Conference on Integrated Information

Kos, Greece September, 29 – October, 3 2011

EDITORS

Georgios A. Giannakopoulos
Technological Educational Institute of Athens, Greece

Damianos P. Sakas
University of Peloponnese, Greece

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Editors

Georgios A. Giannakopoulos

Technological Educational Institute of Athens
Faculty of Management and Economics
Department of Library Science and Information Systems
Address: Aghiou Spyridonos Street, 12210, Egaleo
E-mail: gian@teiath.gr

Damianos P. Sakas

University of Peloponnese
Faculty of Science and Technology
Department of Computer Science and Technology
Address: End of Karaiskaki St., 22100, Tripolis, Greece
E-mail: D.Sakas@uop.gr

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Preface: Proceedings of the International Conference on Integrated Information (IC-ININFO 2011)

GEORGIOS A. GIANNAKOPOULOS

Department of Library Science and Information Systems, Technological Educational Institute of Athens, Aghiou Spyridonos, Egaleo, 12210, Greece

DAMIANOS P. SAKAS

Department of Computer and Technology Science, University of Peloponnese, Praxitelous 89-91, Piraeus, 18532, Greece

Aims and Scope of the Conference

The International Conference on Integrated Information 2011 took place in Kos Island, Greece, between September, 29 and October, 3, 2011. IC-ININFO is an international interdisciplinary conference covering research and development in the field of information management and integration.

The conference aims at creating a forum for further discussion for an Integrated Information Field incorporating a series of issues and/or related organizations that manage information in their everyday operations. Therefore, the call for papers is addressed to scholars and/ or professionals of the fields of Library and Archives Science (including digital libraries and electronic archives), Museum and Gallery Studies, Information Science, Documentation, Information Management, Records Management, Knowledge Management, Data management and Copyright experts the latter with an emphasis on Electronic Publications. Furthermore, papers focusing on issues of Cultural Heritage Management and Conservation Management are also be welcomed along with papers regarding the Management of Nonprofit Organizations such as libraries, archives and museums.

One of the primary objectives of the IC-ININFO will be the investigation of information-based managerial change in organizations. Driven by the fast-paced advances in the Information field, this change is characterized in terms of its impact on organizations that manage information in their everyday operations.

Grouping emerging technologies in the Information field together in a close examination of practices, problems and trends, IC-ININFO and its emphases on integration and management will present the state of the art in the field. Addressed jointly to the academic and practitioner, it will provide a forum for a number of perspectives based on either theoretical analyses or empirical case studies that will foster dialogue and exchange of ideas.

Topics of general Interest

Library Science, Archives Science, Museum and Gallery Studies, Information Science, Documentation, Digital Libraries, Electronic Archives, Information Management, Records / Document Management, Knowledge Management, Data Management, Copyright, Electronic Publications, Cultural Heritage Management, Conservation Management, Management of Nonprofit Organizations, History of Information, History of Collections, Health Information

Symposia

The Conference offered a number of sessions under its patronage, providing a concise overview of the most current issues and hands-on experience in information-related fields.

- Symposium on Integrated information: Theory, Policies, Tools
- 4th Symposium on Business and Management and Dynamic Simulation Models supporting management strategies

- Session on Open Access Rrepositories: Self-archiving, Metadata, Content policies, Usage
- Session on Evidence-Based Information in Clinical Practice
- Session on Business Management and Communication Strategies supporting Decision Making Process in Tourism Sector
- Session on Electronic Publishing: A Developing Landscape
- Session on Information and Knowledge Management
- Session on Information Content Preservation as Outcome of Conservation of Cultural Heritage: Ethics, Methodology and Tools
- Session on Advances Information for Strategic Management
- Session on Information History: Perspectives, Methods and Current Topics
- Session on Divergence and Convergence: Information Work in Digital Cultural Memory Institutions
- Session on Contemporary issues in Management: Organisational Behaviour, Information Technology, Education & Hospital leadership.

The wide range of aspects that the sessions covered, highlighted future trends in the Information Science.

Paper Peer Review

More than 300 papers had been submitted for consideration in IC-ININFO 2011. From them, 91 were selected for presentation, after peer review in a double blind review process. The accepted papers were presented at IC-ININFO 2011.

Thanks

We would like to thank all members that participated in any way in the IC-ININFO 2011 Conference and especially:

- The famous publishing house Emerald for its communication sponsorship.
- The co-organizing Universities and Institutes for their support and development of a high-quality Conference scientific level and profile.
- The members of the Scientific Committee that honored the Conference with their presence and provided a significant contribution to the review of papers as well as for their indications for the improvement of the Conference.
- All members of the Organizing Committee for their help, support and spirit participation before, during and after the Conference.
- The Session Organizers for their willing to organize sessions of high importance and for their editorial work, contributing in the development of valued services to the Conference.
- PhDc Marina Terzi for her excellent editorial work, contributing in the production of the Conference proceedings.

CONFERENCE DETAILS

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Dionysis Kokkinos, National Technical University of Athens

KEYNOTE SPEAKER

Professor Amanda Spink

Professor Amanda Spink has published over 340 scholarly journal articles, refereed conference papers and book chapters, and 6 books. Many of her journal articles are published in the Journal of the American Society for Information Science and Technology, Information Processing and Management, and the Journal of Documentation. She is Editor of the Emerald journal Aslib Proceedings. Amanda's research has been published at many conferences including ASIST, IEEE ITCC, CAIS, Internet Computing, ACM SIGIR, and ISIC Conferences. Her recent books include Information Behavior: An Evolutionary Instinct and Web Search: Multidisciplinary Perspectives, both published by Springer. Amanda's research focuses on theoretical and empirical studies of information behavior, including the evolutionary and developmental foundations. The National Science Foundation, the American Library Association, Andrew R. Mellon Foundation, Amazon.com, Vivisimo. Com, Infospace.com, NEC, IBM, Excite.com, AlltheWeb.com, AltaVista.com, FAST, and Lockheed Martin have sponsored her research. In 2008 Professor Spink had the second highest H-index citation score in her field from 1998 to 2008 [Norris, M. (2008)]. Ranking Fellow Scholars and their H-Index: Preliminary Survey Results. Loughborough University, Dept of Information Science Report].

Session on Information History: Perspectives, methods and current topics

Organizer: Professor Laszlo Karvalics, zkl(at)hung.u-szeged.hu

Department of Library and Human Information Science,

University of Szeged

Description: The field of information history has only been seriously theorized and discussed as an independent area of scholarship over the last ten years or so, and there remains much to be done in order to bring it into the wider academic spotlight. However, during this same period, scholarly work on information in history has been abundant and ever increasing". Toni Weller presents the growing importance of information history research in her latest review in this way (An Information History Decade: A Review of the Literature and Concepts, 2000–2009 Library & information history, Vol. 26 No. 1, March, 2010, 83–97.). Thanks to the emerging domain and the focused attention, information historians are facing with enormous challenges: deepening, enhancing and intensifying the „multitude" with new scholarly approaches, re-interpretations, experimental papers, and, simultaneously, setting up new theoretical frameworks, models, definitions, producing literary steps to the more and more needed synthesis. The session invites both microhistory case studies, portraits of information history schools or thinkers, reviews and evaluations of disciplinary sub-fields.

PROF. LASZLO KARVALICS

Prof. Laszlo Z. Karvalics (50) Budapest, Hungary. Founding director, BME-UNESCO Information Society Research Institute, associate professor, Head, Department of Library and Human Information Science, University of Szeged. Fulbright Research Scholar, George Washington University, Center of International Science and Technology Policy (CISTP) (2007). Teaching and research on social impacts of information technology, comparative analysis of national information strategies, information history and education in the information age. Invited expert in several EU-projects and events. National representative, UNESCO Information for All Program (IFAP), being invited to the Network of Eminent Advisors (NEA) of Global Knowledge Partnership (GKP). Key person of the Hungarian Information Society strategy making. Founding editor of the Hungarian language Information Society quarterly. Has written books, studies and plenty of small articles for the dissemination of the "Information Society thinking" and Internet-culture. His best-selling books are (in Hungarian): Introduction to Information History (Gondolat, 2004) Information, Society, History (Typotex, 2003) Searching of the Information Society (Aula, Budapest, 2001) Toothpick on the Net (Prím, Budapest, 2000) Information Society (from technology to the human aspects) (Muszaki, 1995). His latest book in English: Information Society Dimensions (JATE Press, 2009). MA in History, Literature and Linguistics PhD and Hab. in History, ELTE, Budapest.

Emerging Research Fields in Information History

Laszlo Z. Karvalics

University of Szeged, Department of Library and Human Information Science, 6722, Szeged, Hungary.
zkl(at)hung.u-szeged.hu

Abstract: *After providing a fresh information history basics we roughly present three new, promising, deepening domains with growing importance, getting progressively into the center of intensified scholarly attention: History of Information Architecture, Complex History of Measurement and Information Archaeology.*

Keywords: *Information history, Information architecture, Information archaeology, Measurement history*

I. INTRODUCTION

„The field of information history has only been seriously theorized and discussed as an independent area of scholarship over the last ten years or so, and there remains much to be done in order to bring it into the wider academic spotlight. However, during this same period, scholarly work on information in history has been abundant and ever increasing".

Toni Weller (2010a) presents the growing importance of information history research in her latest review in this way. Thanks to the emerging domain and the focused attention, information historians are facing with enormous challenges: deepening, enhancing and intensifying the „multitude" with new scholarly approaches, re-interpretations, experimental papers, and, simultaneously, setting up new theoretical frameworks, models, definitions, producing literary steps to the more and more needed synthesis.

Few years ago I tried to identify several rising information history research topics (trade routes as information channels, translation history, typologies of information revolutions, early networks and information flow, etc.) in a Hungarian language monograph (Z. Karvalics, 2004). In this paper I roughly present three new, promising, deepening domains with growing importance, getting progressively into the center of intensified scholarly attention.

Before that it seems to be indispensable to define the information history as a relatively new paradigm (Black, 2006, Weller, 2008, 2010) and summarize its main research directions for all those, who meet first time with the information history discourse itself.

The legacy of information history is a programmed re-discovery, re-conceptualization and re-interpretation of well known forms, technologies, tools, institutions, activities, flows, specialists and lot of other aspects of the universe of information and knowledge, transforming them a direct object of targeted research instead of their traditional, simple supporting role of economic, political, cultural, legal, military (etc.) history writing.

It is easy to find information history relevance in every geographical and chronological crosspoints of the history of mankind. However, the theoreticians of information history could identify five or six special "domains", research directions, schools, representing different approaches, aspects or topics.

	Z. Karvalics (2004)	Weller (2008)
1	Information-centered analysis	Cultural and social aspects of information
2	History of Information metabolism (sub)systems	History of Information Systems and infrastructures
3	Social history of Information Technology	Library and Book History
4	The History of the Information phenomena	The history of Sciences, dealing with the phenomena of Information
5	Pre-history of Information Society	Origins of Information Society
6	General Information History	

Table 1. Main research directions of Information history

"Information-centered analysis" focuses on a given historical period, process, or event and utilizes an information approach to achieve a better description of its subject.

The concept of an "*information-metabolism system*" places the complex set of information processes of a given era or of a given area into the focus of investigation.

The *Social History of information technology* is a multidimensional study of given information activities, information technologies or information institutions in a far more complex way than the simple description of the invention processes and their results as a tools, objects or methods.

The *"history of information"* (or the *natural history of information*) scrutinizes the information phenomenon, both in its qualitative and quantitative aspects, as a basic organizing principle of living systems, beginning with the emergence of early representation systems (Levinson 1997).

The *Pre-history of Information Society* is a constant investigation to find the historical roots of the contemporary post-industrial society. Beniger (1986), Black (2001) and Weller-Bawden (2005, 2006), Weller

(2009) are digging back to the mid-19th century, other scientists (Mattelart, 2001, Headrick, 2001, Darnton, 2000) propose to start the storytelling in the late 18th century.

"General information history" aims to develop a valid model and a uniform terminological texture of information-based historiography, as applied to the process of world history (Weller, 2008, 2010b).

Information history research domains are appearing in almost all these directions in varicoloured ways. It is time to zoom for the selected few "streams" of the literature to illustrate the latest improvements. I call them in order *History of Information Architecture*, *Complex History of Measurement and Information Archaeology*.

II. HISTORY OF INFORMATION ARCHITECTURE

In the mid-11th century hermetic text, named *Picatrix* we can read about a large mythical city, Erdetentym (Adocentyn). All around outside the walls of the city Hermes lined up pictures in a well composed structure to influence the habitants' life and moral.

The "pictured wall of Adocentyn" represents only a short chapter in a history of (built, made, spun, carved, fabricated) artificial objects in closed or plain air space for *intentional information and knowledge management purposes*, i.e. memory support, warning, orientation, navigation, education or coordination, etc., from small items (aboriginal cylcons, lunar calendars, stone landmarks, metes and bounds, advertisement tables in Pompeji, scratched beggar signs on walls) to complete architectural objects (lighthouses, clock towers, code steles, like Hammurapi's, etc.). The Roman *portico* and *exedra* was designed for triggering the thoughts and the *cubiculum* to host the meditation. The Renaissance *studiolo* has educational and memory training functions. Kirkbride (2009) could show that the famous Gubbio and Urbino studiolos of Federico da Montefeltro were simultaneously *recombinatoriums* to generate new ideas.

The other aspect of information architecture is the art and profession of *presenting*, *arrangement*, *structuring*, *combinating*, *sizing*, *coloration of the sets (clusters) of information on the given information carriers* for the most effective transmission of meanings, relationships and contexts. The alphabetic order used for information storage by the early encyclopedia makers was an information architecture innovation. The *history of mapping* and the *history of tipography* are also sub-domains of this "Infographic History".

The excellent review of Friendly (2009) presents more than 330 bibliographical items, listing the milestones of Infographic history. We observe growing interest about the life and work of *William Playfair* (1759-1823) the inventor of modern diagrams (line graph, bar chart, pie chart and circle graph), developing them between in 1786 and 1801 in his *Commercial and Political Atlas and Statistical Breviary* re-published few times since the late 18th century. However, the "diagram history research" is going back to the early medieval times, see Kühnel (2005) about the "Karolingian infographics".

Summarizing the prospects of research on early forms of information architecture, there are open doors and windows to expand and augment the concept of environment in historical context, shifting the reconstruction of *Information Environment* aside of other popular and well-processed "environments" (ecological, geographical, settlemental, political, etc.).

III. COMPLEX HISTORY OF MEASUREMENT

At the end of the 16th century Tomas Digges has proudly constructed his *Pantometria*, the science of *measurement of everything* (Digges, 1591). Later, Theodor Mommsen, the famous 19th century archaeologist and linguist was standing the art of measurement aside to writing in his influential *Römische Geschichte's* (1854-1856) 14th chapter (Measurement and writing) as the most important tool of mankind while conquering the World. After all, the positivist turn degraded the role of history of measurement to be a useful and diligent *auxiliary science* of economic history and history of technology and science, with a clear mission: to collect, list, explain and interpret every small and even local units of weight, length, size, distance, time, value, etc. in encyclopaedic form with concordances, supporting the scientific papermakers with up to date conversion tables.

In the last decade, blissfully, a new and prolific era of more and more complex history of measurement was born. The buggle call for a re-emancipation was an important book of Witold Kula (1986) with a strong need to find macro-patterns and longitudinal relations, getting over the good old measurement unit reconstructions. Few years later Crosby (1997) made a giant step towards creating a complex measurement history framework, analyzing the role of quantification in pre-modern Europe. But the real "detonation" of the socially, economically and culturally embedded measurement history is taking place ahead of us. Morley and Renfrew (2010) edited an excellent book on the holistic role of measurement in ancient societies, exploring archaeological evidences. Gooday (2011) "*shows how the advent of commercial electrical lighting stimulated the industrialisation of electrical measurement from a skilled labour-intensive activity to a mechanised practice relying on radically new kinds of instruments"* (as the product description briefs). Allen (2011) explains the revolution of (governmental and corporate) control bodies with the innovations of standardization and performance management, putting a new "puzzle" to the analysis of industrial revolution.

IV. INFORMATION ARCHAEOLOGY

The school of cognitive archaeology (see Renfrew, 2009) puts the thinking process into the center of the examinations, using such a concepts like symbols,

beliefs, motivations, or - horribile dictu - ideology. Otherwise: they are dealing with the prehistory of the mind (Mithen,1996).

Information archaeology is a kind of vestibule of cognitive archaeology, focusing the basic perception and information sharing processes.

The artificial lighting, for example, has a 70.000 years old history, and we have iron age evidences of light telegraphy.

The acoustic factor is falling into line with the visual: the new, most popular targets are the (many a time 30000 years old) musical instruments (the discourse is now about the tuning of the flutes, and the scientists are trying to play on them experimentally) and the ancient rock gongs (a giant piece was found recently by a Westfälische Wilhelms-Universität Münster researcher, Tim Karberg, in Sudan). The archaeologists could also identify lot of important acoustic moment studying prehistoric Maltese temples, Stonhenge ruins and the pre-columbian civilizations in the Andes and Mezo-America. John Rick discovered a special voice-duct system in caves, used by the religious leaders of ancient Chavín de Huántar civilization, and Jonathan Abel (Stanford University) identified them later as "acoustic weapons". (Kolar et al., 2011).

And this is not the end. In a previous monograph on the cultural history of smell (Classen et al, 1994) the authors could compose an almost 40 pages chapter about the aromas of antiquity. The research of early hallucinogenic materials now locking into each other with the interpretation of cave drawings and paintings.

However, and of course, the primary target of information archaeology is the objectivated information itself: pre-writing marking systems, signs, tamgas, motifs, symbols. The families and clusters of these signs, their inter-cultural migration, recombination, development or reuse. The discovery of previously unknown cave paintings and drawings, petroglyphs, scratched bones and other archaeological objects and the growing publicity of these results are gradually enhancing the need for a worldwide, unified pool of the mankind's full early sign asset (a well designed, conceptually univoque, quality assured, open online database). Probably the brand new International Society for Mark Studies, Signum will undertake this lesson. Their coming out book (Pim et al., 2010) seems to be a good starting point.

V. CONCLUSION

It was strongly arbitrary to choose these three research domains and call them "rising". However, we are absolutely sure that in the next few years we'll meet lot of excellent and thought-provoking new books and papers on these topics, affecting and touching many information history directions. Instead of mentioning again the names, I try to denominate the next generation "hot domains" in information history. My prediction is the accelerating strengthening of the following four topics:

- *History of Data Culture*

(The origins of data recording, early database technologies and the formation of complete data cultures, including standards, specialists and user training)

- *Early warning, alarming and signalling systems*

(Especially the history of fire services and other *disaster prevention* technologies, like the old tsunami stones in Japan. This direction is also in close connection with the *paleoastronomy*).

- *Origins of numeracy*

(New evidences are expected about the Neolithic roots. Concerning to the early civilization centers' numeric culture, the revival of *accounting history* is foreseeable.)

- *Information management protosystems*

(Professional "workflow" of state and corporate bureaucracies, in particular in the early modern Europe and the century of the control revolution – from mid-19th to mid-20th century (Beniger, 1986).

REFERENCES

Allen, D.W.: *The Institutional Revolution: Measurement and the Economic Emergence of the Modern World (Markets and Governments in Economic History)* University Of Chicago Press (December 1, 2011)

Black, A: The Victorian information society: Surveillance, bureaucracy, and public librarianship in 19th-century Britain Information Society, **17** (1) 63-80 (2001)

Black, A.: Information history Annual Review of Information Science and Technology, **40**, 441-473. (2006)

Beniger, J.R.: The Control Revolution: Technological and Economic Origins of the Information Society. Harvard University Press Cambridge, MA (1986)

Classen C., Howes, D., Synnott, A.: *Aroma: The Cultural History of Smell* Routledge(1994)

Crosby, A.W.: *The Measure of Reality: Quantification and Western Society, 1250-1600* Cambridge University Press (1997)

Darnton, R.: An Early Information Society. News and the Media in Eighteenth Century Paris *American Historical Review* **2.** 1-35. (2000)

Digges, T. A.: *Geometrical Practical Treatize named Pantometria*. London: Abel Jeffes (1591)

Friendly M.: Milestones in the history of thematic cartography, statistical graphics, and data visualization http://www.math.yorku.ca/SCS/Gallery/milestone/milestone.pdf (2008). Retrieved Aug.11, 2011

Gooday, G. J. N.: *The Morals of Measurement: Accuracy, Irony, and Trust in Late Victorian Electrical Practice* Cambridge University Press (2011)

Headrick D. R.: *When Information Came of Age: Technologies of Knowledge in the Age of Reason and Revolution, 1700-1850* Oxford University Press (2001)

Kirkbride, R.: *Architecture and Memory: The Renaissance Studioli of Federico da Montefeltro* Columbia University Press (2009)

Kolar, M.A., Cook, P.R., Abel, J.S., Rick, J.W.: Acoustics, architecture and instruments in ancient Chavin de Huantar, Perú (Upcoming presentation https://ccrma.stanford.edu/groups/chavin/publications.html)

Kula, W.: *Measures and Men* Princeton University Press 1986

Kühnel, B.: Carolingian Diagrams, Images of the Invisible In: *Seeing the Invisible in Late Antiquity and the Early Middle Ages* Ed by de Nie, G., Morrison, K.F., Mostert, M. Brepols Publ. 359-389 (2005)

Levinson, P.: The Soft Edge: *A Natural History and Future of the Information Revolution* Routledge (1997)

Mattelart, A.: *Histoire de la société de l'information* La Découverte (2001)

Mithen, S. J.: *The prehistory of the mind: a search for the origins of art, religion, and science*, London, Thames and Hudson (1996)

Morley, I., Renfrew, C.: *The Archaeology of Measurement: Comprehending Heaven, Earth and Time in Ancient Societies* Cambridge University Press (2010)

Pim, J.E., Yatsenko, S.A., Perrin, O.T. (Eds.): Traditional Marking Systems: A Preliminary Survey. Dunkling Books, London & Dover (2010)

Renfrew, C.: Prehistory: The Making of the Human Mind New York: Random House (2009)

Weller, T.: *Information history - an introduction: exploring an emergent field*, Chandos, Oxford (2008)

Weller, T.: *The Victorians and information: A social and cultural history*, VDM Verlag (2009),

Weller, T.: An Information History Decade: A Review of the Literature and Concepts, 2000–2009 *Library & information history*, **26**, 83–97 (2010a)

Weller, T (Ed.).: *Information History in the Modern World: Histories of the Information Age*, Palgrave Macmillan (2010b)

Weller, T., Bawden, D.: The social and technological origins of the information society: An analysis of the crisis of control in England, 1830-1900) Journal of Documentation, **61** (6) 777-802. (2005)

Weller, T., Bawden, D. Individual perceptions: A new chapter on Victorian information history Library History, **22** (2) 137-56. (2006)

Z. Karvalics, L: *Bevezetés az információtörténelembe* (Introduction to Information History) Gondolat, Budapest (2004)