

SHOT 2006 Panel Proposal

Title: The Commercialized Internet and its Users in the 1990s

Official Panel Proposal of the SIG on Computers, Information and Society

Relation to Conference Themes:

Theme 3: Conversations between History of Technology and other Disciplines
(Cronin is Dean of the School of Library and Information Science at Indiana University and brings a different disciplinary perspective. Also, papers blend elements of the history of technology and business history).

Theme 2: Technology, Games and Entertainment
(One of the papers is about the internet and pornography)

Chair: William Aspray, Indiana University

Organizer: Thomas Haigh, University of Wisconsin-Milwaukee

Commentator: James W. Cortada, IBM

Presenters:

Thomas Haigh, University of Wisconsin -- Milwaukee

Crippled by its Own Strengths: The Software Infrastructure of the Commercializing Internet

Blaise Cronin, Indiana University.

The Internet and Pornography

Atsushi Akera, RPI

Re-envisioning Community:

A Contemporary US History of Social Networking and Community Informatics

Session Description

Historians of technology have so far said almost nothing about the development of today's commercialized Internet. Within the space of a few years of the arrival of the first web browsers in the early 1990s, the Internet became the domain of companies trying to get rich building its hardware and software infrastructure, diverse groups of people building online communities, and businesses conducting online commerce. Historians of technology are uniquely well positioned to examine the processes by which technologies spread into new areas, change social structures, and are reshaped by their users. Yet the only significant work so far produced on the history of the Internet, Janet Abbate's *Inventing the Internet*, is focused exclusively on the early years of the network, during which it was exclusive domain of academic and military users.

Why did the Internet become so popular so quickly? To what extent did the technological and social decisions embedded in the young Internet by its academic creators shape its tumultuous adolescence? What drew so many diverse groups of users to the rapidly commercializing Internet? How was the Internet itself reshaped by its new users and uses? No historians have yet addressed these questions. The three papers presented in this panel are a first attempt to do so.

Haigh's paper lays the foundations for discussion by considering the three most important kinds of internet application software: web browsers, email, and search engines. These tools provide the key elements of most internet user's daily on-line experiences, are crucial parts of the net's software infrastructure. Haigh looks at the origins of these internet tools in the academic Internet of the 1980s and early 1990s to argue that the very factors that made them so attractive to early users (such as simplicity, openness, and lack of central regulation) meant that the commercialized internet lacked many crucial capabilities already well established on other networks designed for business use. While products and technologies were created to plug some of the original design holes, the problems induced by this shift of technology from one social space to another leave it, in the words of his title, a system crippled by its own strengths.

The other two papers explore the uses made of the commercializing internet by particular social groups. Cronin surveys the development of the Internet as a remarkably popular and flexible medium for the distribution of pornography. He explores the mutual shaping of Eros and technology, analyzing the new forms of business organization and pornographic content that sprang up on the Internet and documenting the parallel process by which pornography became a "killer application" that reshaped the Internet itself.

Akera reinterprets the development of online communities and activist "community informatics" efforts in the light of the established historical literature on the development of earlier communications technologies. He argues that ideological assumptions have constrained the choices that have been made with respect to community networking initiatives, especially in forgoing more commercial alternatives.

Collectively, these three papers mark an important first step in reframing the development of the Internet during the past fifteen years in terms of the issues and insights established in the history of technology literature.

Crippled by its own Strengths: The Software Infrastructure of the Commercializing Internet

Thomas Haigh, University of Wisconsin -- Milwaukee

Topic: The mid-1990s saw the commercialization of the Internet and the two most important kinds of internet application software: web browsers/servers and email. These tools provide the key elements of most internet user's daily on-line experiences, are crucial parts of the net's software infrastructure. Their appeal largely explains the Internet's abrupt shift from an obscure academic and military research network to the world's universal mechanism for electronic communication. The fundamental design principles embedded in early web browsers and email systems reflected the academic milieu of the early Internet. Internet email evolved slowly within the sheltered academic world, while the first web browsers performed the technologically trivial task of implementing a simple hypertext language and common interface to existing Internet resources.

Argument: The strengths of the web and of Internet email reflected the concerns and cultures of their research-oriented early users and designers: simplicity, ease of implementation, open protocols, lack of central regulation and the ad-hoc pragmatism of their design that favored a working system this week over a great system in a few years time. The same virtues explain the Internet's rapid spread beyond academia into homes, offices and schools. But in the harsher world of the commercial Internet, web links tended to break and content was hard to find, fraudulent spam proliferated, users had no secure or convenient way to pay for online content or services, and email users had no way to know if their own messages had been received. Technologies such as search engines, spam blockers, and credit card encryption and validation tools could only alleviate these ills, not cure them. These problems were not unavoidable features of all online systems, and indeed had already been solved elsewhere. Commercial email systems and the X.400 international standards agreed for email provided much features like guaranteed delivery, identity verification, receipt confirmation, encryption, shared email directories and so on. Likewise, and in contrast to the early commercialized web, the complex hypertext research systems tackled problems such as searching and the updating of links when content moved or vanished. The shift of technology from one social space to another rendered the Internet a technological system crippled by the same strengths that initially ensured its ubiquity.

Evidence: Primary sources exist in abundance, in particular archived Usenet news groups and technical publications concerning the architecture, reception and design principles of Internet software. Newspapers, magazines, academic journals and other published sources provide a great deal of information.

Contribution to Existing Literature: My paper draws upon rich veins of work in the history of technology concerning the evolution of technological systems, the mutual shaping of technology and society and the role of users in technological change. Beyond its significance as one of the first explorations of the commercialized internet by an academic historian, my paper highlights the more general phenomenon by which a technological system initially shaped by one environment and set of values is socially and culturally re-constructed as it moves into a different social space.

The Internet and Pornography

Blaise Cronin, Indiana University

Topic: The Internet, with its global reach, interactivity and massive channel capacity, has transformed the market for pornographic goods and services. Pornography is a construct of fairly recent origin, first appearing in the Oxford English Dictionary in the mid-nineteenth century. Pornography consumption is no longer the preserve of a miniscule (elite) minority, nor something that happens at the periphery of polite society. Pervasive computing has spawned polymorphous pornography; on TV and cinema screens, desktops, laptops, cell phones, and iPods. The statistical reality is that millions of Americans view millions of pornographic images daily, often paying for the pleasure. We live in what Kendrick calls ‘the postpornographic era,’ one in which a growing slice of the nation’s disposable income is allocated to the acquisition of highly diverse sexual representations, interactive experiences and fantasy goods.

Argument: Socio-technically speaking, the Internet and the adult entertainment business are co-constitutive. Technology alone does not determine the means and modes of production: the Internet is shaped as much by pornography as pornography is shaped by the Internet. I also identify and briefly analyze a number of significant developments associated with the adult entertainment industry, both supply and demand side: diversification, consolidation, globalization, substitution, domestication, democratization, segmentation, customization, commodification, legitimation, corporatization, and “prosumption”.

Evidence: Solid data can be hard to come by. The euphemistically-labeled adult entertainment industry itself has little interest in either ontological or etiological issues: it is too busy making money and burnishing its public image. I critique some of the frequently cycled statistics on the dimensions of the adult market and its constituent parts and discuss the pyramid-like structure of the industry, the constellation of established firms and new entrants, and the factors that seem to confer competitive advantage (e.g., brand salience, proprietary digital asset base, access to investment capital, lifestyle positioning, technological innovation capacity) in the digital environment. To illustrate some of my general points I profile the organizational and financial structures of several publicly traded and privately held companies, ranging from global multi-media corporations to ego-centered start-ups.

Contribution to the Existing Literature: Although we have been inundated by journalistic, and frequently sensationalistic, descriptions of the spread of Internet pornography, little serious academic work in information science or the history of technology has addressed the topic. This work breaks new ground in its discussion of ways in which pornography reshaped the internet itself, and by grounding Internet pornography in the broader historical story of pornography’s proliferation with new communication technologies.

Re-envisioning Community: A Contemporary US History of Social Networking and Community Informatics

Atsushi Akera, Rensselaer Polytechnic Institute, USA

Topic: Technology has often served as a powerful mirror for the reconstruction of individual and community identities. Various studies on the early history of wireless telegraphy, phonographs, and radio broadcasting have demonstrated how these varied technologies of communication have each served to foster, and erase, sub-cultural identities. This paper provides a ‘contemporary history’ of computer-network based communications (from the early Free-Nets to current WiFi-based municipal network initiatives) by mapping these technologies onto the conceptual framework for community and identity formation established by these prior studies.

Argument: I argue that the persistent use of the Internet to support community development and sub-cultural identities resulted from two interrelated factors. The first was the direct, historical infusion of communitarian, democratic ideology into community networking projects, from early electronic bulletin board services such as the WELL, to the participatory-action orientation of ‘community informatics’ initiatives (social research-based initiatives for using information technology to strengthen local communities). The second was the technical affordances of the Internet itself, read not as an essential difference between computer networks and broadcast media, but in terms of the situated practices through which communities were able to rework the technology to serve their specific interests. While these differences have not prevented the substantial commercialization of the Internet—and have bracketed out certain approaches to technological engagement—they have nevertheless fostered a more pluralistic approach to cultural production as backed by diverse notions of community.

Sources: Any topic in contemporary history poses unique challenges. Although few relevant sources exist in traditional archives, this paper draws on material found in Internet archives, as supplemented through more traditional sources and interviews. The presentation will be illustrated with rich material documenting the early history of community networking initiatives.

Contribution to the Literature: Although there are many, reflexive analyses of community networks published within the ‘Internet Studies’ genre, these works continue to be framed in terms of the democratic potential of the technology. While I am entirely sympathetic to the goals of community networks and informatics, the more descriptive approach of history can help bring much needed perspective to this literature. Social historical studies of the early history of radio, for instance, by Cohen, Douglas and others have documented the considerable instrumentality of this technology in preserving, constructing and reconstructing cultural identities. The emphasis of this literature has been on the eventual dominance of a more homogeneous mode of cultural production as determined by commercial interests and the social imaginary of US national culture. However, the proliferation of online communities and sub-cultural identities on the Internet (and its immediate precursors) provides us with an opportunity to reopen the dialogue. Specifically, this paper suggests how ideological assumptions and technological affordances have sustained diverse approaches to cultural production, even in foreclosing certain choices by rejecting more commercial approaches and alternatives. These observations should result in a contribution not only to the literature, but also to practice.

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SELECTED ACADEMIC:

University of Wisconsin--Milwaukee, Asst. Professor, School of Information Studies, 2004-

Indiana University, Bloomington, Visiting Assistant Professor, Informatics School, Fall 2003

Colby College, Visiting Instructor/Visiting Researcher, STS/Admin. Sci., 2001-3

University of Pennsylvania, History and Sociology of Science Ph.D. May 2003

Manchester University (UK), Department of Computer Science, B.Sc. & M.Eng, 1991-1995

SELECTED PEER REVIEWED PUBLICATIONS:

Thomas Haigh, "A Veritable Bucket of Facts: Origins of the Database Management System" in *Proceedings of the Second Conference on the History and Heritage of Scientific and Technical Information System* (New Jersey: Information Today, 2004).

"ADAPSO and the Service Bureau Industry, 1961-1968," *IEEE Annals of the History of Computing* 26:1 (January-March 2004): 78-85.

Thomas Haigh, "Software in the 1960s as Concept, Service, and Product", *IEEE Annals of the History of Computing* 24 (January-March 2002): 5-13.

Thomas Haigh, "The Chromium Plated Tabulator: Institutionalizing an Electronic Revolution, 1954-1958", *IEEE Annals of the History of Computing* 23 (October-December 2001): 75-104

Thomas Haigh, "Inventing Information Systems: The Systems Men and the Computer, 1950-1968" *Business History Review* 75 (Spring 2001): 15-61.

OTHER PUBLICATIONS, HONORS & SERVICE:

Around twenty shorter publications, including book reviews, obituaries, biographies, comments, and a review essay.

Thirteen competitively reviewed presentations, including three SHOT papers, three Business History Conference papers, and papers at the North American Labor History Conference and Hagley conference on the Technological Fix. Ten invited presentations and departmental seminars including Tokyo University and a public keynote address at the 2005 CHOC workshop in Amsterdam.

Awards, Grants and Fellowships include:

Software History Center Research Fellowship (2003),

IEEE Life Member Fellowship in Electrical History (2000-01),

Tomash Fellowship in the History of Information Processing (Babbage Institute, 1999-00),

William Penn Fellowship (1995-99) - four year non-service stipend and fees,

Fulbright Award for post-graduate study in the US (1995-96)

Biographies editor and board member of *IEEE Annals of the History of Computing*

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Blaise Cronin
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Blaise Cronin is the Rudy Professor of Information Science at Indiana University Bloomington, where he has been Dean of the School of Library and Information Science for fifteen years.

From 1985-1991 he held the Chair of Information Science and was Head of the Department of Information Science in the Strathclyde University Business School, Glasgow. He is concurrently Visiting Professor in the School of Computing at Napier University, Edinburgh, For six years he was the Talis Information Visiting Professor of Information Science at Manchester Metropolitan University.

He has published extensively on scholarly communication, citation analysis, scientific collaboration, and cybermetrics. His books include *The Citation Process* (Taylor Graham, 1984), *Elements of Information Management* (with E. Davenport, Scarecrow Press, 1991), *The Scholar's Courtesy* (Taylor Graham, 1995) and *The Hand of Science* (Scarecrow Press, 2005). He is Editor of the *Annual Review of Information Science and Technology*.

He has considerable international experience, having taught, conducted research, or consulted in more than 30 countries: clients have included the World Bank, U.S. Department of Justice, Asian Development Bank, Unesco, Brazilian Ministry of Science & Technology, European Commission, British Council, Her Majesty's Treasury, Hewlett-Packard, British Library, Commonwealth Agricultural Bureaux, Association for Information Management, and Chemical Abstracts Service. He was a founding director of Crossaig, an electronic publishing start-up in Scotland, which was acquired in 1992 by Institute for Scientific Information (ISI) in Philadelphia.

He was educated at Trinity College Dublin (M.A.) and the Queen's University of Belfast (Ph.D., D.S.Sc.) In 1997, he was awarded the degree Doctor of Letters (D.Litt., *honoris causa*) by Queen Margaret University College, Edinburgh for his scholarly contributions to information science.

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Academic History:

Assistant Professor. 2002-present. Department of Science and Technology Studies, Rensselaer Polytechnic Inst.

Lecturer. September 1999-2002. Department of Science and Technology Studies, RPI.

Education:

Ph.D. August 1998. University of Pennsylvania, Department of History and Sociology of Science.

M.A. August 1994. University of Pennsylvania, Department of History and Sociology of Science.

S.B. June 1986. Massachusetts Institute of Technology, Program in Science, Technology, and Society.

S.B. June 1986. Massachusetts Institute of Technology, Department of Electrical Engg. and Computer Science.

Honors and Awards:

IEEE Postdoctoral Fellowship. AY 1999-2000. IEEE History Center Fellowship in Electrical History.
Smithsonian Institute Fellow. Summer 1996. Smithsonian Institution, National Museum of American History.

Adelle and Erwin Tomash Fellowship. AY 1995-1996. Charles Babbage Institute for the History of Information Processing, University of Minnesota.

Publications and Presentations (selected):

Atsushi Akera. [forthcoming] *Calculating a Natural World: Scientists, Engineers, Computers and the Rise of American Cold War Research* (Cambridge, Mass.: MIT Press).

_____. [in press] "What is 'Social' About Social Construction? Understanding Internal Fissures in Constructivist Accounts of Technology," *Social Epistemology* **19/3**.

_____. [forthcoming] "Constructing a Representation for an Ecology of Knowledge: Methodological Advances in the Integration of Knowledge and Its Social Context," *Social Studies of Science*.

Atsushi Akera and William Aspray, eds. 2004. *Using History to Teach Computer Science and Related Disciplines* (Washington, D.C.: Computing Research Associates).

Atsushi Akera. 2002. "IBM's Adaptation to Cold War Markets: Cuthbert Hurd and His Applied Science Field Men," *Business History Review* 76:767-802.

Atsushi Akera and Frederik Nebeker, eds. 2002. *Creating Modern Computing* (New York: Oxford University Press).

Atsushi Akera. October 2001. "Voluntarism and the Fruits of Collaboration: The IBM Users Group Share," *Technology and Culture*.

_____. 2000. "Engineers or Managers? The Systems Analysis of Electronic Data Processing in the Federal Bureaucracy." In Agatha Hughes and Thomas Hughes, eds., *Systems, Experts and Computers* (Cambridge, Mass.: MIT Press).

James W. Cortada
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James W. Cortada has held various management positions at IBM for 31 years and is the author of some three dozen books on the history and management of information technology and business.

Education: B.A. History and Spanish, Randolph-Macon College (1969); M.A. American History, Florida State University (1970); Ph.D. Modern European History, Florida State University (1973).

Selected Historical Publications:

The Digital Hand: How Computers Changed the Work of American Financial, Telecommunications, Media, and Entertainment Industries. New York: Oxford University Press, 2006. Pp. 650.

The Digital Hand: How Computers Changed the Work of American Manufacturing, Transportation, and Retail Industries. New York: Oxford University Press, 2004. Pp. 512.

A Nation Transformed by Information: How Information Shaped the United States from Colonial Times to the Present. New York: Oxford University Press, 2000. Pp.400—with Alfred D. Chandler, Jr. (Spanish edition, *Una nacion transformada por la informacion: como la informacion ha modelado a Estados Unidos de America desde la epoca de la Colonia hasta la actualidad* [Mexico, D.F.: Oxford University Press, 2002]; English paperback edition, 2003).

Information Technology as Business History: Issues in the History and Management of Computers. Westport, CT: Greenwood Press, 1996. Pp. 270.

Before the Computer: IBM, NCR, Burroughs, and Remington Rand and the Industry They Created, 1865-1956. Princeton, NJ: Princeton University Press, 1993.

Association Activities: Trustee of the Charles Babbage Foundation, which is associated with the Charles Babbage Institute, University of Minnesota, 1997-Present; Chairman of the Board, CBF, 1998-Present. American Historical Association: presenter at 2 annual conventions (1978, 1998), member since 1970; Society for the Study of Spanish and Portuguese History, various conference presentations, co-organizer 1978 annual convention, member since 1970; Virginia Historical Society, member since 1965 (youngest member in the history of this organization); Society for History of Technology, Advisory Council, 2002-2005, member 2002-Present.

Editorial Boards and publisher relationships: IEEE Annals of the History of Computing board, 1998-Present; but have served on editorial boards of several other history and TQM journals, 1970s-80s. Served as referee for books at AMACOM, McGraw-Hill, Prentice-Hall, PTR/Financial Times, Princeton University Press, MIT, Stanford University Press, and Oxford University Press; and for both business and history journals.

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William Aspray is Rudy Professor of Informatics at Indiana University – Bloomington. He also holds adjunct appointments in the department of history and philosophy of science, the school of library and information science, and the department of computer science. Until recently, he was also special advisor in the Office of the Vice President for Research.

His research focuses on the history and policy of information technology. He is the author or editor of more than ten books and fifty articles in the policy and history fields. Recent publications include *Computer: A History of the Information Machine* (2004, 2nd edition, Westview, co-edited with Martin Campbell-Kelly), *Using History to Teach Computer Science and Related Disciplines* (2004, Computing Research Association, co-edited with Atsushi Akera), *Women and Information Technology* (2006, MIT Press, co-edited with Joanne Cohoon), and *Globalization and the Offshoring of Software* (2006, Association for Computing Machinery, co-edited with Frank Mayadas and Moshe Vardi).

Current research includes a book, co-edited with Paul Ceruzzi, on the history of the commercialized Internet and its impact on American business; a corporate history of Symantec, a leading computer security firm; and a social science literature review of the reasons for the under-representation of women as information technology entrepreneurs.

Aspray has taught at Harvard (history of science), Minnesota (history of science and technology), Pennsylvania (history and sociology of science), Virginia Tech (science and technology studies, public policy), and Williams (mathematics and computer science).

He has also served in several administrative positions: associate director of the Charles Babbage Institute, University of Minnesota; director, IEEE Center for the History of Electrical Engineering; and executive director of Computing Research Association.