SCHOLARLY COMMUNICATION INSTITUTE

August 2013

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Director, Scholarly Communication Institute

Reports on Summer Institutes

With funding from [The Andrew W. Mellon Foundation](), the Scholarly Communication Institute (SCI) began in 2003 with the goal of providing an opportunity for scholars and leaders in scholarly disciplines and societies, academic libraries, information technology, and higher education administration to design, test, and implement strategies that advance the humanities through the use of innovative technologies. Each Institute has explored scholarly communication through a focus on one or more of four core topics:

- *scholarly practices*—the research, analysis, presentation, vetting, publication, and teaching by which scholars advance knowledge and inquiry;
- *organizational models*—the departments, disciplines, learned societies, and humanities research centers that act as sites of scholarly practices;
- *infrastructure*—the human and technical capacities that support scholarship locally and among institutions; and
- *modes of working*—the methods of inquiry that emerge from use of new technologies, such as collaborative investigation, virtual modeling, and Web-based informal discourse; and, recursively, how these new modes affect scholarly behaviors, organizational models, and infrastructure.

From its inception, SCI has focused on cultivating leadership and encouraging and enabling the integration of new technologies into scholarship. SCI 1 assembled a group of pioneers in digital scholarly communication to review progress over the last two decades and lessons learned, and to identify strategies for continuing progress in the arts and humanities. The reflections of early participants set the stage for eight subsequent institutes. These Institutes have focused on several scholarly disciplines, the nature and potential of collaborative working structures, critical questions surrounding the use of new media technologies to advance scholarship in unique and innovative ways, and

the institutional infrastructure essential to enable digital scholarly communication.

This archive preserves descriptions, programs, and materials relating to each of the preceding Scholarly Communication Institutes.

SCI 9 (2011) New-Model Scholarly Communication: Road Map for Change
SCI 9 focused on assessing new models of humanities publishing, creating a road map for catalyzing the most promising of them, and developing implementation strategies. The meeting brought together scholars, librarians, publishers, higher education administrators, and funders noted for their innovative approaches to scholarly communication.

SCI 8 (2010) Experimental Approaches to New-Model Scholarly Communication
SCI 8 focused on exploring forms of publication that take advantage of new affordances of digital technologies, both for research and for representing knowledge. The meeting gathered scholars experimenting with new venues for the dissemination and assessment of scholarship online. The goal of this Institute was to identify the publishing needs of such scholars and to articulate the new forms of scholarly publishing—beyond digital versions of analog monographs and journals— suitable for their work. Though we did not focus on issues of validating and credentialing per se, we addressed them as appropriate, understanding that publishers rely on a community of expert scholars to determine what scholarship merits publication.

SCI 7 (2009) Spatial Technologies and Methodologies
SCI 7 focused on *spatial technologies and methodologies*—the specific modes of working they favor, the scholarly practices they enhance, and the infrastructure they demand to achieve scale and significance. Also considered were visualizations such as virtual modeling and concept mapping, as appropriate. SCI 7 brought together accomplished scholars from the humanities and social sciences, as well as leaders in information technology and data stewardship, to explore the range of these technologies and their promise to advance humanities scholarship.

SCI 6 (2008) Humanities Research Centers
SCI 6 assembled a group of recognized scholars and pioneers in digital scholarship, leaders in the humanities, and program officers from funding agencies interested in advancing digital scholarship through a reflection upon experiences of the broader scholarly community, the evolution of humanities scholarship, and examples of 'national models' for centers of excellence.

SCI 5 (2007) Visual Studies
Visual media, i.e. motion pictures, photography, video, 3-D images, simulations, and new media artworks, are having profound effects on scholarship. SCI 5 brought together several accomplished scholars from the humanities and sciences, including both theorists and practitioners, focusing primarily on 'visual scholars', those who utilize the visual in all facets of

scholarly communication, from research and analysis to communicating their scholarship to others.

SCI 4 (2006) Architectural History

SCI 4 2006 focused on the discipline of architectural history. Participants explored the promises of new information technologies to represent more accurately the visual and spatial domains of the built environment.

SCI 3 (2005) Digital Humanities

The third SCI in 2005 focused on those who had extensive digital experience in the humanities and attempted to address the challenge of sustainability by developing institutional strategies that would support on-going digital scholarship.

SCI 2 (2004) Practical Ethics

The second SCI, held at the University of Virginia in 2004, convened institutional teams (senior scholars, junior scholar/graduate student, University administrator and librarian) to focus on opportunities for innovation in digital scholarship in a specific field: Practical Ethics.

SCI 1 (2003) Goals and Strategies

The first three Scholarly Communication Institutes (SCI), 2003-2005, were designed to explore opportunities for advancing innovation in digital scholarly communication and to catalyze digital scholarship and start to build the core infrastructure to support it in the arts and humanities.

SCHOLARLY COMMUNICATION INSTITUTE

August 2013

Leadership, 2012-2013

Ian Baucom
Director, Franklin Humanities Institute
Professor of English, Duke University
President, Consortium of Humanities Centers and Institutes

Dan Cohen
Founding Executive Director
Digital Public Library of America
Former Director, Roy Rosenzweig Center for History and New Media
George Mason University

Kathleen Fitzpatrick
Director of Scholarly Communication
Modern Language Association

Neil Fraistat
Director, Maryland Institute for Technology in the Humanities (MITH)
Professor, English
University of Maryland

Tara McPherson
Associate Professor, School of Cinematic Arts
University of Southern California
Founding Editor
Vectors Journal of Culture and Technology in a Dynamic Vernacular

Tim Murray
Professor, English and Comparative Literature
Director, Society for the Humanities
Curator, Rose Goldsen Archive of New Media Art
Cornell University

Bethany Nowviskie
Director, Digital Research & Scholarship
University of Virginia Library
Associate Director, Scholarly Communication Institute
President, Association for Computers and the Humanities

Katina Rogers
Senior Research Specialist
Scholarly Communication Institute

Abby Smith Rumsey
Convener and Director
Scholarly Communication Institute

John Unsworth
Vice Provost for Library & Technology Services
Chief Information Officer
Brandeis University

Kathy Woodward
Professor, English
Director, Simpson Center for the Humanities
University of Washington

SCHOLARLY COMMUNICATION INSTITUTE

Leadership, 2008-2012

James Chandler
Barbara E. & Richard J. Franke Distinguished Service Professor, Department of English, University of Chicago
Director, Franke Institute for the Humanities, University of Chicago
Member, Consortium of Humanities Centers and Institutes (CHCI) International Advisory Board

Dan Cohen
Associate Professor, Department of History and Art History, George Mason University
Director, Center for History and New Media, George Mason University
Member, Steering Committee, centerNet

David Germano
Associate Professor, Department of Religious Studies, University of Virginia
Director, The Tibetan and Himalayan Library, University of Virginia

Charles J. Henry
President, Council on Library and Information Resources
Publisher, Rice University Press

James Hilton
Professor, Department of Psychology, University of Virginia
Vice President and Chief Information Officer, University of Virginia

Tara McPherson
Associate Professor, School of Cinematic Arts, University of Southern California
Founding Editor, *Vectors* Journal of Culture and Technology in a Dynamic Vernacular

Bethany Nowviskie
Director, Digital Research & Scholarship, University of Virginia Library
Associate Director, Scholarly Communication Institute

Abby Smith Rumsey, Convener
Director, Scholarly Communication Institute

Michael P. Steinberg
Director, Cogut Center for the Humanities, Brown University
Barnaby Conrad and Mary Critchfield Keeney Professor of History and Professor of Music, Brown University

Member, Consortium of Humanities Centers and Institutes (CHCI) International Advisory Board

Diane Parr Walker
Deputy University Librarian, University of Virginia Library
Co-Principal Investigator, Scholarly Communication Institute

Steven Wheatley
Vice President, American Council of Learned Societies

Karin Wittenborg
University Librarian, University of Virginia Library
Co-Principal Investigator, Scholarly Communication Institute

SCHOLARLY COMMUNICATION INSTITUTE

Leadership, 2003-2008

Together with Deanna Marcum, former SCI director Richard E. Lucier founded the Scholarly Communication Institute in 2003.

The following people made important contributions to the Scholarly Communication Institute as members of the steering committee in the period from 2003 to 2008:

Srinivas Aravamudan
Director, John Hope Franklin Humanities Institute, Duke University
President, CHCI International Advisory Board

Bernard Frischer
Director, Institute for Advanced Technology in the Humanities

Charles J. Henry
President, Council on Library and Information Resources

James Hilton
Vice President and Chief Information Officer, University of Virginia

Richard E. Lucier
Director, Scholarly Communication Institute

Deanna Marcum
Associate Librarian for Library Services, Library of Congress

Kelly Miller
Research Associate, Scholarly Communication Institute

Bethany Nowviskie
Director, Digital Research and Scholarship, UVa Library; Program Associate, SCI
(Bethany Nowviskie became SCI Associate Director in 2008.)

Abby Smith
Senior Advisor, Scholarly Communication Institute
(Abby Smith Rumsey became SCI Director in 2008.)

Diane Parr Walker
Deputy University Librarian, University of Virginia Library

Steve Wheatley
Vice President, American Council of Learned Societies

Kate Wittenberg
Director, The Electronic Publishing Initiative at Columbia (EPIC) Columbia University

Karin Wittenborg
University Librarian, University of Virginia Library
Convener and Co-Principal Investigator, Scholarly Communication Institute

SCHOLARLY COMMUNICATION INSTITUTE 2: PRACTICAL ETHICS

July 18-21, 2004

Abby Smith Rumsey, Senior Advisor
Scholarly Communication Institute

The Vision

The Scholarly Communication Institute (SCI) was funded to "provide an opportunity for leaders in the field [of scholarly communication] to study, plan, and organize institutional and discipline-based strategies for advancing the state of scholarly communication. Participants will be challenged to imagine the ideal scholarly communication system, and what the changing nature of scholarly inquiry might look like in such a system." From the beginning there was a commitment on the part of the organizers to be pragmatic and to develop strategies and action plans that would result in real-world modeling and testing of the ideal.

Originally a collaboration between the Council on Library and Information Resources (CLIR) and the Dartmouth College Library, the SCI held its first session in July 2003. Convening a number of leading scholars, librarians, publishers, technologists, and academic officers, it set itself the task of identifying what the fundamental challenges to transformation are in the humanities disciplines. The participants recommended a strategy for lowering those barriers: they agreed that the institutes to follow in the next two years would be organized around disciplinary research and publication, not around pedagogy. The sessions would not support gifted and innovative individual scholars to pursue their work, but rather support institutional teams comprising scholars, librarians, technologists, and academic officers; these would constitute the core units of experimentation upon which to build partnerships of innovators.

Planning for Session Two

When CLIR's key collaborator at Dartmouth College, Richard Lucier, decided to retire last year, we sought a new partner in the University of Virginia Libraries, led by Karin Wittenborg, who had been a participant in the first SCI session. The organizers decided early on that we would not address the barriers to progress in fields that had tried innovative approaches to scholarly

communication and had already hit the usual walls (identified in detail at the first SCI session: lack of credentialing within the peer-review hierarchy; lack of sustained funding; lack of flexibility; and lack of scalability). It is completely beyond the power of agents outside a discipline, such as the SCI, to engender the systemic changes needed to make a difference within that discipline, especially on matters so close to the profession as peer review and departmental decision-making. That was, after all, Lesson Number One from the Dartmouth SCI session.

Instead, we decided to focus on an academic discipline that may be noted less for its individual pioneers in digital scholarship than for its history of working in highly collaborative modes, of being open to change, and of being friendly to pragmatism in the service of scholarship. It was also an imperative from the first SCI to focus on a discipline with special strength at UVa. That way we could start with strong scholarly partners already on campus, and from that base we could engage a field by catalyzing an endogenous peer-to-peer network across several different campuses. Our hypothesis was that if we could ignite the imagination of senior scholars–help them see how information technologies might enable new and possibly better research and teaching approaches–then we could expect them to draw their peers and graduate students into this experiment; and over time the best of their work would be adopted naturally within the discipline and across several campuses.

Practical Ethics became the field of choice for our second year. It is an emerging discipline grounded in philosophy and religious studies. It has from its origins in the 1960s been collaborative, interdisciplinary, and geographically located on campuses in research centers, not academic departments. The Institute for Practical Ethics and Public Life at the University of Virginia, under the direction of James Childress and Ruth Gaare Bernheim, took the lead in recruiting other centers for Practical Ethics to join the SCI2. In the end, three centers brought teams to Charlottesville, each noted for its academic strength and for the strength of their libraries' commitments to digital scholarship: the Kenan Institute for Ethics at Duke University; the Poynter Center for the Study of Ethics and American Institutions at Indiana University; and the Center for Bioethics at the University of Minnesota.

The organizers also convened an external advisory group to help develop the SCI2 program. Most of these advisors had been to the SCI1, but a few were added because of their expertise in philosophy or digital humanities. Jim Childress and Ruth Gaare Bernheim talked the group through what they saw as the communication problems facing their community and, more importantly, what "grand challenges" Practical Ethics will engage in the coming decades. This mix of challenges, both grand and mundane, became one of the guiding principles of the session planning and determined who we invited both to be presenters and to be non-presenting participants.

Accomplishments of Session Two

A fuller account of the discussions held at SCI2 can be found in the session notes. What follows is a summary of the key intellectual and organizational issues that we engaged over the course of SCI2.

Practical Ethics: Definitions, Challenges, and Aspirations

The ethicists at SCI2 identified a number of characteristics of their work that frame their approaches to scholarly communication and the various technologies that support their research, teaching, and dissemination. The field of Practical Ethics attempts to bridge theory and practice, and so positions methodological issues at the very core of the discipline. The methodologies of various interrogations of sources, as well as searching and presentation of them, became the entry point for many of the discussions, and this focus was especially helpful in opening up the discussions to those outside the field. At that level, we were all able to contribute to the debates about fundamentals of scholarly communication and scholarship as such.

David Germano's presentation of the Tibetan and Himalayan Digital Library made several claims for digital scholarship, many of them to be read in the context of SCI2 as ethical imperatives for humanities scholars writ large:

- To understand other cultures
- To "take back our scholarship" from publishers
- To remove or obviate privileged communications
- To integrate a host of resources and resource types (media, formats)
- To make the accessibility of information in multiple languages a research and development priority
- To build in the promise of active learning where students can build knowledge from information and "breaking the mimetic contract between student and teacher" (you spit back to me what I told you)
- To allow multiple contributors to provide content and services to a common site but include credit for work done by each

These are all ethical imperatives (loosely speaking) that digital technology can enable. Others contributed to this list of desirable behaviors that technology could, if properly designed and used, enable. One philosopher, William May, noted that the technology is naturally one that favors broadcast, not narrow-cast; that is, it moves information horizontally across networks, not primarily vertically up and down chains of hierarchy. Thus it is less effective at the "filial discourse" of the academy in which one directs ones' voice upwards to the figures of authority, rather than out and across to the brothers and sisters in the field. Still others called for building on that digital dynamic to open up both professional discourse and public.

To the extent that Practical Ethics defines itself as "case-based moral reasoning," the interactive media-based case studies that Robert Cavalier showcased demonstrated the technology's particular affinity for the field of ethics. The technology encourages the co-existence of many media in one space, from video to sound to text, without necessarily privileging one over the other. It allows for the full emotional impact of visual images that are also part of the

empirical experience and decision making itself. The Dax Cowart case interactive program was one that thrust the viewer into the shoes of those forced to make decisions about the injured man's fate. It had programmed into it the ability to simulate the decision-making process by parsing out information from the perspective of the various actors at different times. Cavalier argued that, if properly designed, interactive multimedia allow for "reflective engagement."

It is crucial for ethicists that the technology build in spaces for reflection, not just information creation, sorting, dissemination. Otherwise, given how digital technologies foreshorten the usual time between writing and publishing, there is a danger of publishing on the Web deteriorating into what May characterized as "drive-by ethics," or the equally regrettable debasement of wisdom into "knowingness." This presents special temptation to Practical Ethics, according to the ethicists, because much of the information they rely on falls not into the category of "timeless," but rather into that of "timeliness." They need the best possible data about breaking news stories such as the Shuttle disaster, the wreck of the Exxon Valdez, developments in stem-cell research, or the facts of Abu Ghraib. Who knew what when are crucial information points in every ethics case.

There are many ways to correct for this tendency to "knowingness," though, once this is foregrounded as a hazard. One way, an ethicist suggested, is to include moral exemplars in our work, thus reinforcing the crucial distinction between wisdom and expertise. Others confirmed that this emphasis on "practical wisdom" in ethics, while not new, is one of the "grand challenges" of the discipline.

The Double-Decker Bus

The creative tension in the field between the empirical and theoretical is another of the grand challenges participants identified as a special area of promise for new information technologies. Case-based moral reasoning must be grounded firmly in the particular and experiential–the context in which ethical choices are made–because each set of ethical choices is constrained by (or defined by) the intractable and non-theoretical facts on the ground. But if one does not move beyond the immediate context in which events occur (in a legal case, in a medical case, in an environmental impact statement, or any number of other professional and policy arenas) into the realm of reflection, then we are not doing Practical Ethics. One needs to go into the world of action, but arrive there with a theoretical perspective and the reflective practices that ethicists rely on. Most importantly for Practical Ethics as its practitioners defined it at SCI2, they must they let the empirical world have its influence in the development of theory. There is nothing static about any of this.

This dynamic found a happy metaphor when Elizabeth Kiss quoted James Boyle, her colleague at Duke who specializes in intellectual property law, saying that he often felt as if he were riding on a double-decker bus, with his professional colleagues on the top deck, those who live in the world of experience (copyright owners and those using copyrighted works in his case) in

the lower deck. The parallel with Practical Ethics is striking. And as the sessions progressed, it emerged that the ethicists' greatest area of interest for concern about scholarly communication lay not in bridging communication divides between the scholarly discourse versus teaching versus general public discourse. Rather, their deeper interest is in the two-way traffic between the upper deck of theory and the lower deck of empiricism. Making the movement "down" into the world of the hospital, or the law courts, or the corporation, or research lab, presents one set of problems. But of more concern–at least as it played out at SCI2–is how to make the climb back "up." The return trip from experience to theory, from the immersion into the world to a distancing and reconnection with the creative energies of ethics scholarship emerged as the "communication challenge" that the teams plan to tackle in their follow-up to the institute. People agreed with the assertion by William May that "social vector" of academic writing in Practical Ethics is "outward, over, and across" as opposed to "upward" and "filial" to the gatekeepers, as in more traditional academic discourse. The vector of digital communication is also "outward, over, and across."

Once that participants had grasped the nettle of methodology, people could begin to map possible technological solutions to the challenges posed. How can ethicists tap into the knowledge and wisdom of philosophy and religious studies, once they have left the fold to enter into the empirical realm? How do they negotiate the up-and-down-and-back-up again in the academy? Several ethicists expressed an abiding concern about the possibility of being co-opted by the culture in which they are immersed; they feel an intense need for the critical distance that their grounding in philosophy or religious studies gives them. But tapping into that reflective literature can be extremely time-consuming because it is difficult to keep up the literature these days. How does one mediate among the sources available on the Web and elsewhere to find what they need in an efficient way?

What Digital Information Technologies Offer for Practical Ethics

Discussions about the ways that technology might assist ethicists do Practical Ethics were always accompanied by observations about what technology will not be able to do, and what hazards new technologies may introduce into the mix. Technologies by their nature change not only what we are able to investigate, but also how we frame the context in which the objects of inquiry occur, as was vividly demonstrated by the debates among ethicists about the ways the Dax Cowart case changed according to how it was presented–in video or interactive media. Investigators must always understand their instruments. The telescope gives us a cosmic view; the microscope a reductionist view. Technology saturates the outcome.

An improved scholarly communication system could ease some pains of communication for Practical Ethics, but whatever is put into place will always reflect the fundamental dilemmas that the field finds itself in. An example: Because Practical Ethics is interdisciplinary, it requires self-teaching in the area beyond the core education in philosophy or religious studies. This is usually an immersion in an unfamiliar domain like the hospital or the lab. This

experience was described as something akin to anthropological field work or area studies cultural immersion. While this is a routine feature of Practical Ethics, there is no set formula for assessing the integrity of this cross-disciplinary work. There is no one path to be taken that is recognized as correct within the discipline. Technology will not change any of that by itself.

But technology does have the ability to make multiple views of an information resource possible. That is, it allows for the shifting perspectives into a space that are inherent in the domain–the empirical context and the theoretical framework can both be accommodated. Moreover, because digital technology by its nature forces scholars to "disambiguate" certain terms or contexts with which they are very familiar, as Germano noted, it does have the virtue of making experts examine unexamined assumptions.

These were among the points made by the presenters who were able to match their experiences with digital scholarly projects of their own with what they heard the ethicists say they view as the promise of technology. Other key lessons offered to the SCI by presenters include:

- Team-building is a crucial element of success in this realm, both teams built across professional boundaries on campus (e. g., the Hopkins' Roman de la Rose project), and across universities (Tibetan and Himalayan Digital Library)
- Team work itself has ethical dimensions, as so much of the key work of a project like the Rose is done by normally low-visibility partners (librarians, technologists, graduate students) or resource-limited partners (Tibetan partners).
- Partners with content to provide must find a reliable hosting institution (e. g., in the case of the Tibetan and Himalayan Digital Library, it is the UVa library; in the case of the Rose, it is the Hopkins library).
- Partnerships must involve alignment of self-interests (e. g., Hopkins had little content to contribute to the Rose: by providing the technology infrastructure, it gained access to others' content, just as the content-rich institutions gained infrastructure support).
- Commercial partners may or may not have a sustainable self-interest in an academic partnership–due diligence is required.
- All partnerships, even virtual ones, must invest in constant communication, including face-to-face meetings.

Robert Cavalier reinforced the centrality of scholars finding libraries to partner with. With the "computational turn" in philosophy, he warned, libraries will become necessary and major players in order that what happens in the lab will "get to publication" and be accessible far into the future.

Conclusion

Judging by the richness of discussion over several days, together with a final presentation by team members expressing their resolve to pursue an experiment in a new model of scholarly communication, we can cautiously say that our hypothesis about how to catalyze change was borne out, at least in

this instance. Bringing together distinguished and open-minded scholars, teaming them with potential partners from their own campus, and exposing them to innovative strategies from numerous areas of digital humanities, did ignite their imagination and inspire them to pursue some common action.

Most significant for the organizers in retrospect was to witness the forging of new intramural alliances for action. Those new alliances are not between the centers for Practical Ethics, who clearly already have a basis of trust and collaboration going, but between professionals across campuses–scholars and graduate students with librarians, academic officers, and technologists. Although co-habiting the same campus, these individuals had experienced few occasions to come together, and fewer to learn about and explore what each has to offer the other. This probably speaks more to the nature of the contemporary university than either the individuals involved or the disciplines they represent. One of the challenges that innovators in scholarly communication will continue to encounter is the fractionated nature of the academy, the chronic shortage of time to come together in reflection and exploration, and the lack of professional reward for taking a risk.

Our keynote speaker, Deanna Marcum, threw down the gauntlet to the participants in her opening remarks, saying that humanists work in ways that are inimical to the emerging digital information environment because their traditional methodologies favor those who work, "monk-like," in isolation from one another. In the new environment scholars are often dependent on massive systems and supporting infrastructure that do not favor a "by-the-each" approach that have shaped print-on-paper based university presses and research libraries. How, she asked, do we come together to build common systems and resources if there are no traditions of working together?

Among other things, the days that followed served as a lively refutation of that characterization, at least in terms of how humanist scholars actually work through intellectual problems. The group spent a good deal of their social time skulling through the thorny problems that emerged during the working sessions. And by the second day that teams were reporting back on their identification of several disciplinary resources they would like to build together and share through networked communications.

The SCI2 also showed that while new technologies–in this case, information technology–can be disruptive, they always prompt serious people to examine their core assumptions and to reconnect with their chosen professions in ways that rekindle their enthusiasm and curiosity. The ways in which the ethicists grappled out loud with the core matter of the discipline actually allowed the many non-ethicists in the room to enter into their world in a surprisingly intimate and welcoming way. In the same vein, the librarians and technologists were ready, even eager, to engage in problem solving and articulating strategies for moving forward.

The four teams left the institute talking of planning some real-world modeling and testing of their idea for a common information resource. They proposed modeling a repository for case studies and populating it with some iconic cases

in different fields. While they were torn between creating a resource with depth versus one with breadth, the felicitous thing about building a case study repository is that the layers of data can be so heterogeneous, from primary sources in all media, to commentary, scholarly explication, etc., that they need not choose between the two. Moreover, there is the promise of good "alignment of self-interests," as Sayeed Choudhury had espoused. Each center of ethics can contribute their strengths and no one has to play to their weaknesses. The University of Minnesota can do case studies in stem-cell research, which is their primary interest. Another can contribute cases in business ethics, and so forth. Many of the iconic cases, from Tuskegee to Enron, can be multivalent, viewed from the perspectives of different sub-fields within Practical Ethics. And to build such a repository would mean engaging in some of the fundamentals of the field, such as building taxonomies.

CLIR and UVa will be supporting the next stages of this institute, facilitating their communications and, through some follow-up funding, helping the teams put together a plan and funding proposal to take their model to the next stage.

**SCHOLARLY COMMUNICATION INSTITUTE 2:
PRACTICAL ETHICS**

July 18-21, 2004

PARTICIPANTS

Milton Adams is Professor of Biomedical Engineering and Electrical and Computer Engineering, University of Virginia and Vice Provost for Academic Programs. He earned his PhD in biomedical engineering from UVa, followed by a postdoctoral fellowship at Albany Medical College. His research investigates control of cardiovascular and pulmonary systems, most recently the design of a control system for a new left ventricular assist device with magnetic bearings. He teaches classes in biomedical engineering physiology as well as in electrical engineering and has received the University Alumni Association Distinguished Professor award.

Ruth Gaare Bernheim is Executive Director of the University of Virginia's Institute for Practical Ethics and an Assistant Professor of Medical Education. She earned her law degree at the University of Virginia in 1980 and went on to get a Masters in Public Health in 1993 at the Johns Hopkins University School of Public Health. Gaare Bernheim then worked as a Professor in the School of Public Health at Johns Hopkins from 1994-99 and became Associate Director of the Johns Hopkins Bioethics Institute in 1995, serving in that position until 1998.

Barbara Brandt is currently Assistant Vice President for Education in the University of Minnesota Academic Health Center, and Professor, Pharmaceutical Care and Health Systems, University of Minnesota College of Pharmacy. Dr. Brandt holds Master of Education and Doctor of Philosophy degrees in Adult and Continuing Education with a specialty in continuing education from the University of Illinois at Urbana-Champaign. Her current responsibilities include developing and implementing academic health center-wide interprofessional education, community-based education, and technology-enhanced learning programs in allied health, dentistry, medicine, nursing, pharmacy, public health and veterinary medicine.

Richard Brown, PhD, is the director of Georgetown University Press. Prior to moving to Georgetown in 2001 he was the director of Westminster John Knox Press, the editor of Pilgrim Press, and an editor at the Miller Center of Public Affairs at the University of Virginia. He holds a PhD from the University of

Virginia in Religious Studies, a Masters of Theological Studies from Emory University, an MBA from the University of Louisville, and an AB from the University of North Carolina at Chapel Hill. In the early 1980s he worked for a weekly newspaper in Atlanta, Georgia, and as a news writer for Seeds, a hunger magazine. In 2003-2004 he was the president of the Washington Book Publishers Association. He is married to Claudia Jiamachello Brown, and they have four children.

Robert Cavalier received his BA from New York University and a PhD in Philosophy from Duquesne University. He has taught philosophy at a number of colleges and universities and has co-authored CAI programs for logic. In 1987 he joined the staff at Carnegie Mellon's Center for Design of Educational Computing (CDEC), where he became Executive Director in 1991. Dr. Cavalier is currently affiliated with CMU's Center for the Advancement of Applied Ethics. A member of Carnegie Mellon's Philosophy Department, he teaches numerous courses including Ethics and Political Philosophy. Dr. Cavalier is internationally recognized for his work in education and interactive multimedia. He is President of the "International Association for Computing and Philosophy" (2001 – 2004) and Chair of the APA Committee on Philosophy and Computers (2000-2003). Dr. Cavalier has given numerous addresses and keynote speeches here and abroad. In 1996 Cavalier was designated "Syllabus Scholar" by Syllabus Magazine in recognition of his life long work with educational technologies. In 1999 he received an award for "Innovation Excellence in Teaching, Learning and Technology" at the 10th International Conference on College Teaching and Learning. In 2002 he was recipient of the H&SS Elliott Dunlap Smith Teaching Award.

James F. Childress is the Edwin B. Kyle Professor of Religious Studies and Professor of Medical Education at the University of Virginia, where he is also co-director of the Virginia Health Policy Center. He served as Principal of UVa's Monroe Hill College from 1988 to 1991, and as Chair of the Department of Religious Studies.1972-1975, 1986-1994. In 1990 he was named Professor of the Year in the state of Virginia by the Council for the Advancement and Support of Education. He is the author of numerous articles and several books in biomedical ethics, including Principles of Biomedical Ethics (with Tom L. Beauchamp), Priorities in Biomedical Ethics, Who Should Decide? Paternalism in Health Care, and Practical Reasoning in Bioethics (forthcoming). He as vice chair of the national Task Force on Organ Transplantation, and he has also served on the Board of Directors of the United Network for Organ Sharing (UNOS), the UNOS Ethics Committee, the Recombinant DNA Advisory Committee, the Human Gene Therapy Subcommittee, the Biomedical Ethics Advisory Committee, and several Data and Safety Monitoring Boards for NIH clinical trials. In July 1996, President Clinton appointed him to the newly formed National Bioethics Advisory Commission. Childress is also a fellow of the American Academy of Arts and Sciences, as well as of the Hastings Center, and he has been the Joseph P. Kennedy Sr. Professor of Christian Ethics at the Kennedy Institute of Ethics at Georgetown University (1975-79) and a Visiting Professor at the University of Chicago Divinity School and Princeton University. He received his BA from Guilford College, his BD from Yale Divinity School, and his MA and PhD from Yale University.

Sayeed Choudhury is the Associate Director for Library Digital Programs at Johns Hopkins University. Additionally, he is the Hodson Director of the Digital Knowledge Center, the digital library research and development unit at Hopkins. He has been the Principal Investigator on digital library projects funded by the National Science Foundation, the Institute of Museum and Library Services, and the Mellon Foundation. He has served on the program committee for the Joint Conference on Digital Libraries, Web-Wise, Advances in Digital Libraries, and the NSF/IMLS Joint Principal Investigators meeting, and published articles in various journals in D-Lib and the Journal of Digital Information.

Nancy Davenport has just assumed the Presidency of CLIR following a career at the Library of Congress. She left LC as the Director for Acquisitions, after having served as Chief of two of the special collections divisions. Earlier in her career she was involved in policy analysis for the Congress.

Debra DeBruin is an Assistant Professor in the Center for Bioethics and the Department of Medicine, University of Minnesota Medical School. She serves as the Director of Graduate Studies for the Center. She received her BA from Carleton College magna cum laude with distinction in philosophy, and her PhD in philosophy from the University of Pittsburgh. She also completed a Greenwall Postdoctoral Fellowship in Bioethics and Health Policy at Johns Hopkins University School of Hygiene and Public Health and Georgetown University. In addition to teaching philosophy and bioethics, Dr. DeBruin has served as a health policy fellow for Senator Edward Kennedy (D-MA) in the Democratic office of the Health, Education, Labor and Pensions Committee of the United States Senate. She has also worked as a consultant to the National Academy of Sciences Institute of Medicine and the National Bioethics Advisory Commission on issues relating to the ethics of research. She was Project Director for the Robert H. Levi Leadership Symposium on the ethics of Medicare reform, a forum designed to bring together eminent scholars with influential policy makers for extended discussion of fundamental moral issues concerning Medicare reform. Her areas of interest include the ethics of research involving human participants and public health policy.

Matthew DeCamp (BS, Purdue University) entered the Duke University Medical Scientist Training Program in 2000 and is in his third year of graduate work in the Department of Philosophy. Past focuses of his research have included the effects of health care commodification on the physician-patient relationship, as well as the ethical issues raised in population-based and behavioral genetics research. He has worked with Duke University's Institutional Review Board, Center for the Study of Medical Ethics and Humanities, and Center for Genome Ethics, Law and Policy. His future research may focus on international distributive justice in emerging genetic biotechnologies and the sociocultural influences on the formation of moral beliefs.

David S. Ferriero, the Rita DiGiallonardo Holloway University Librarian and Vice Provost for Library Affairs at Duke University, began his career as a shelver in the Humanities Library of the Massachusetts Institute of Technology. He as appointed to his current position in October of 1996 after 31 years in a variety

of positions in the libraries at MIT, including Acting Co-Director of Libraries. Ferriero is responsible for Duke's seven-unit Perkins Library System, including Duke's Center for Instructional Technology. He serves on the Boards of the Triangle Research Libraries Network, the North Carolina Networking Initiative, the Center for Research Libraries, and the Research Libraries Group. In addition he is a Vice President of the Triangle Universities Center for Advanced Studies and chair of the North Carolina Access to Special Collections Working Group. On 1 September 2004, Ferriero assumes his new duties as the Andrew W. Mellon Director and Chief Executive of the Research Libraries of the New York Public Library.

Saul Fisher is Associate Program Officer at the Mellon Foundation, where he works on the Teaching and Technology program, the Research in Information Technology program, and on special projects with American universities abroad. He joined the Foundation's staff in 1998. He is currently working on a monograph concerning the Foundation's Cost-Effective Uses of Technology in Teaching projects (with David Stern, UC Berkeley). Fisher received an AB in Political Science and Philosophy from Columbia University, an MA in Philosophy from Rice University, and a PhD in Philosophy from the Graduate School and University Center of The City University of New York. He also studied at the CNRS in Paris on a Fulbright grant. In addition to his primary philosophical work in history and philosophy of science, he has also written on a range of topics in philosophy of architecture, including architectural ethics.

Bernard Frischer earned his BA (1971) and PhD (1975) in Classical Studies. He has had fellowships from the Woodrow Wilson Foundation, the Michigan Society of Fellows, the American Academy in Rome, the ACLS (twice), the Center for Advanced Study in the Visual Arts, and the Loeb Classical Library. Trained in both philology and archaeology, Frischer is the author of four books and many articles on the Classical world and its survival. He started applying computer technology to his scholarship and teaching in the early 1980s. In the mid-1980s, he created a database of all digitized Classical texts, and he was the Director of the UCLA Humanities Computing Facility. In the early 1990s, he was active in the field of quantitative linguistics and stylistics, publishing a series of articles on the dating and attribution of controversial Greek and Latin texts. In the late 1990s, he founded the UCLA Cultural Virtual Reality Laboratory, whose mission is to create authenticated computer models of cultural heritage sites around the world. The lab's models range in time from the Bronze Age to the Colonial Age and in space from Peru to Israel. The lab has been the subject of television programs on the Discovery Channel as well as articles in leading newspapers and magazines including The New York Times, Newsweek, Scientific American, and the International Herald Tribune. In addition to pursuing digital archaeology, he has been the Director of the Horace's Villa Excavation of the American Academy in Rome. In 2004-05 he will move from UCLA and assume the directorship of the Institute for Advanced Study in the Humanities at the University of Virginia.

David Germano is an associate professor of Tibetan and Buddhist Studies at the University of Virginia. He is also the director of the Tibetan and Himalayan Digital Library (www.thdl.org). In this context, he has been deeply involved with

using digital technology creatively to facilitate interdisciplinary approaches to the study of cultures, and the building of collaborative scholarly networks.

Stephen M. Griffin is a Program Director in the Division of Information, and Intelligent Systems at the National Science Foundation (NSF). He is currently Program Director for Special Projects and for the Interagency Digital Libraries Initiative and the International Digital Libraries Collaborative Research and Applications Testbeds program. Prior to his current assignment, Mr. Griffin served in several research divisions, including the Divisions of Chemistry and Advanced Scientific Computing, the Office of the Assistant Director, Directorate for Computer and Information Science and Engineering, and staff offices of the Director of the NSF. He has been active in working groups for Federal high performance computing and communications programs, and serves on numerous domestic and international advisory committees related to digital libraries and advanced computing and networking infrastructure. His educational background includes degrees in Chemical Engineering and Information Systems Technology. He has additional graduate education in organizational behavior and development and the philosophy of science. His research interests are in topics related to interdisciplinary research and scholarly communication. He has been active in promoting cultural heritage informatics and computing and the humanities and arts.

Michael Grossberg is Professor of History & Law at Indiana University and Editor of the American Historical Review. His research focuses on the relationship between law and society in American history, particularly the intersection of law and the family. He has written a number of books and articles on legal and social history including a recently published co-edited volume, American Public Life and the Historical Imagination. He is currently working on a history of child protection in the United States to be published by Harvard University Press and is co-editing The Cambridge History of Law in the United States. Grossberg has also been involved in a number of public policy research projects, including a current one designed to devise guidelines for genetic testing in child custody cases. He has held fellowships from the National Endowment of the Humanities, the American Council of Learned Societies, the Newberry Library, the American Bar Foundation, and has been a Fellow at the National Humanities Center. He teaches courses in American legal and social history. Grossberg has also published articles on scholarly editing and is a founder of the History Cooperative, an electronic publishing project devoted to historical scholarship. Through the Cooperative he has overseen the development of projects in digital scholarship and participated in the creation of policies on such issues as the review of electronic books and the archiving of digital journals.

Amy Harbur obtained her MLIS degree from the Catholic University of America in May 2003. She worked at the Council on Library and Information Resources as an intern (2002-2003) and as a Program Associate (2003-2004), where she was involved in several projects including the Bill & Melinda Gates Access to Learning Award and the Mellon Fellowships for Dissertation Research in the Humanities in Original Sources. In March 2004 Amy moved to the Digital Library Federation, where she is rapidly taking charge of the logistics for such

mission-critical aspects of DLF as the semi-annual Forums and is becoming familiar with the work of the wide range of DLF initiatives.

Charles Henry is currently Vice Provost and University Librarian at Rice University. He is in charge of the library, the digital library initiatives, data application centers, and academic information technology. Previously he was director of libraries at Vassar College and assistant director, Division of Humanities and History, at Columbia University. Dr. Henry has served on the Steering Committee for the Coalition for Networked Information, is past president of the National Initiative for a Networked Cultural Heritage, is on the Advisory Committee for the new International University-Bremen, and a member of the Steering Committee for the Digital Library Federation in Washington. He chairs the Committee on Computer Science and the Humanities, sponsored by the American Council of Learned Societies and the Computer Science and Telecommunications Board of the National Academy of Engineering. In 2001, Henry accepted a six-year appointment to the Texas Online Authority. Henry received his PhD from Columbia University and has published widely in the field of technology and higher education.

Willis Jenkins is a graduate student in the Department of Religious Studies at UVa, writing his dissertation on Christian theology and environmental ethics. He has been a research fellow in environmental ethics at the Institute for Practical Ethics since 2002, and will be the Sally Brown Fellow in Environmental Literature at Brown College (UVa) for 2004-6.

Deborah Johnson is the Anne Shirley Carter Olsson Professor of Applied Ethics and Chair of the Department of Science, Technology, and Society in the School of Engineering and Applied Science of the University of Virginia, Charlottesville, Virginia. Johnson is the author or editor of four books and over 40 papers on ethics and computing and engineering ethics. Computer Ethics (Prentice Hall) is now in its 3rd edition (2001) and has been translated into Spanish and Japanese. Johnson received the ACM SIGCAS 2000 Making A Difference Award in 2000 and the Sterling Olmsted Award from the Liberal Education Division of the American Society for Engineering Education, 2001.

Jeffrey Kahn is the Maas (pronounced Mace) Family Chair in Bioethics, and Director of the Center for Bioethics at the University of Minnesota. He is also Professor of Medicine, and holds additional faculty appointments in the Universitys Medical School, School of Public Health, and Department of Philosophy. Dr. Kahn works in a variety of areas of bioethics, exploring the intersection of ethics and public health policy, including research ethics, ethics and genetics, and ethical issues in public health. His degrees are in microbiology (BA, UCLA, 1983); health policy (MPH, Johns Hopkins, 1988); and philosophy/bioethics (PhD, Georgetown, 1989). He has published over 85 articles in both the bioethics and medical literature. Dr. Kahn has served on numerous state and federal advisory panels, and speaks nationally and internationally on a range of bioethics topics. His most recent book is entitled Beyond Consent: Seeking Justice in Research, published by Oxford University Press. From 1998-2002 he also wrote the bi-weekly column "Ethics Matters" on CNN.com.

Elizabeth Kiss is the Nannerl O. Keohane Director of the Kenan Institute for Ethics and an Associate Professor of the Practice of Political Science and Philosophy at Duke University. The mission of the Kenan Institute for Ethics is to support the study and teaching of ethics and to promote moral reflection and commitment in personal, professional, community, and civic life. Elizabeth specializes in moral and political philosophy and has published on human rights, on the application of rights theories to issues of ethnic conflict and nationalism, on feminist debates about rights and justice, and on justice in the aftermath of human rights violations. She co-directs the Humanitarian Challenges at Home and Abroad FOCUS program for first-year students and helped establish Duke's new Center for Genome Ethics, Law, and Policy. Elizabeth has spoken about ethics, moral education, and academic integrity to audiences around the country and has led ethics workshops for a wide array of groups, including middle-school students, undergraduates, university staff, community leaders, business people, and elected officials. Kenan Institute for Ethics projects have included a business ethics initiative with North Carolina companies, Ethics at Work, four national conferences on Moral Education in a Diverse Society, a two-part public television series on Moral Leadership in Public Life that aired on public television stations across the country, the North Carolina Character Educators of the Year awards, and Middle School Visions. A graduate of Davidson College, Elizabeth received a B.Phil. and D.Phil. in philosophy from Oxford University in England and has taught at Princeton University and Randolph-Macon College and held fellowships at the Harvard Program in Ethics and the Professions and at the National Humanities Center. She serves on the boards of the Association for Practical and Professional Ethics, Davidson College, and the Center for Academic Integrity.

Wendy Pradt Lougee is University Librarian and McKnight Presidential Professor at the University of Minnesota (since June 2002). As University Librarian, she is responsible for a system of 14 libraries on the Twin Cities campus. Prior to Minnesota, Lougee served as Associate Director of Libraries at the University of Michigan, with responsibility for digital library development, including the creation of projects such as JSTOR, Making of America, Early English Books Online as well as the Digital Library Extension Service. Her research and publication interests include digital libraries, information economics, and the redefinition of library roles in a digital age. Lougee holds a BA in English (Lawrence University), an MS in Library Science (University of Wisconsin), and an MA in Psychology (University of Minnesota).

Deanna Marcum was appointed Associate Librarian for Library Services at the Library of Congress on August 11, 2003. In this capacity she manages 53 divisions and offices whose 2,400 employees are responsible for acquisitions, cataloging, public service, and preservation activities, services to the blind and physically handicapped, and network and bibliographic standards for America's national library. She is also responsible for integrating the emerging digital resources into the traditional artifactual library – the first step toward building a national digital library for the 21st century. Prior to coming to LC, she was President of the Council on Library and Information Resources (CLIR). Dr. Marcum holds a PhD in American Studies, a master's degree in Library Science, and a bachelor's degree in English.

Charles Mathewes is associate professor of religious studies at the University of Virginia, where he teaches courses on religious and theological ethics, religion and culture, religion and politics, and religion and the social sciences. He received his PhD from the University of Chicago in 1997 with a concentration in theology and ethics, and joined UVa's faculty that year. He has written on issues related to theological ethics from both a theoretical and an applied perspective, focusing in the latter mostly on political issues. He is the incoming editor for the Journal of the American Academy of Religion, where his tenure will last until 2010.

William F. May is the Cary M. Maguire University Professor of Ethics, emeritus, Southern Methodist University (1985-2001). He also served there as the founding director of the Cary M. Maguire Center for Ethics and Public Responsibility. Earlier faculty appointments include Smith College (1952-1966); Indiana University, where he founded and chaired the Department of Religious Studies (1966-1980); and Georgetown University, where he held a chair at the Kennedy Institute of Ethics (1980-1985). Recently, he was a visiting professor at Yale University at the Institute for Social and Policy Studies. May is the recipient of fellowships from the Danforth Foundation, the Lilly Endowment, and the Guggenheim Foundation; and teaching awards from Indiana University, Southern Methodist University, and the American Academy of Religion. He is past president of the American Academy of Religion and of the Society for Christian Ethics; a visiting national scholar for the Phi Beta Kappa Society; and a founding fellow of the Hastings Center, where he served as co-chair of its research group on Death and Dying. His books include: A Catalogue of Sins; The Physician's Covenant; Images of the Healer in Medical Ethics; The Patient's Ordeal; Testing the Medical Covenant (active Euthanasia and Health Care Reform); and The Beleaguered Rulers: the Public Obligation of the Professional (a comparative study of eight professions). He is also editor of Entrusted with Giving and Receiving: Am I My Foolish Brother's Keeper 2002-2003. He served as a member of the Clinton Task Force on Ethical Foundations for Health Care Reform (1993) and from 2002-2004 on the President's Council on Bioethics, Washington, DC.

Glenn McGee, PhD is a philosopher and bioethicist who specializes in the ethical, legal, social and economic implications of biomedical sciences. Dr. McGee is best known for introducing innovative ways of thinking about new or controversial areas of research and treatment, integrating research with teaching and his dedication to his graduate and undergraduate students. Dr. McGee has been a consultant for government and industry on matters of bioethics and has authored more than 200 articles and essays. A few of his well known publications include The Perfect Baby: A Pragmatic Approach to Genetics, which deals with the ethical issues of reproductive genetics; What's in the Dish, in which he and co-author Arthur Caplan present arguments for stem cell research and Beyond Genetics which is slated to hit bookshelves later this summer, which discusses how the gene revolution will change our normal lives. He has also discussed his views on stem cell research on programs such as NPR's Talk of the Nation and numerous bioethical issues on international and national television shows. Dr. McGee received his PhD from Vanderbilt University in 1994. Prior to this time he was director of the Vanderbilt Doctoral

Training Initiative, a doctoral program in genetics and ethics for scientists-in-training. Dr. McGee completed a post-doctoral fellowship from the U.S. National Human Genome Research Initiative at the University of Iowa. He founded the undergraduate minor and honors program in bioethics at the University of Pennsylvania in 1997. Dr. McGee is Editor in Chief of the American Journal of Bioethics, one of the most widely read bioethics journals in the nation. Currently he is a professor of philosophy, bioethics and history and sociology of science as well as Associate Director for Education and Senior Fellow at the Center for Bioethics, Department of Medical Ethics in the School of Medicine at the University of Pennsylvania.

Richard B. Miller is the Director of the Poynter Center for the Study of Ethics and American Institutions and Professor of Religious Studies at Indiana University, where he has taught since 1985. His research interests include the ethics of war and peace; practical reasoning in public life; and medical ethics, with special attention to children. Miller is the author of Interpretations of Conflict: Ethics, Pacifism, and the Just-War Tradition (University of Chicago Press, 1991); Casuistry and Modern Ethics: A Poetics of Practical Reasoning (University of Chicago Press, 1996); and Children, Ethics, and Modern Medicine (Indiana University Press, 2003), along with articles and book chapters on the ethics of humanitarian intervention, civic virtue, multiculturalism, and religion and public intellectuals. He is a member of the American Academy of Religion, the Society of Christian Ethics, the American Society of Bioethics and the Humanities, and the Association for Professional and Practical Ethics. Miller is currently working on a book-length project entitled, 9/11, War, and Moral Memory.

Stephen G. Nichols, James M. Beall Professor of French and Humanities and Chair of the Romance Languages and Literatures Department at The Johns Hopkins University, also served as Director of the School of Criticism and Theory, based at Cornell, from 1995-2000. He was interim Director of the Sheridan Libraries at Johns Hopkins in 1994-95. A specialist in medieval literature, art, and history, he received the Modern Language Association's James Russell Lowell Prize for an outstanding book by an MLA author in 1984 for Romanesque Signs: Early Medieval Narrative and Iconography. In 1991, The New Philology, conceived and edited by Nichols for the Medieval Academy of America, was honored by the Council of Editors of Learned Journals. In 1992, the University of Geneva conferred on him the title of Docteur ès Lettres, honoris causa, while the French Minister of Culture made him Chevalier de l'Ordre des Arts et Lettres in 1999. He is a Fellow of the Medieval Academy of America, an Honorary Senior Fellow of the School of Criticism and Theory, and has written or edited nineteen books. He has been visiting professor at a number of universities in North America, and abroad, and has held the following fellowships: Guggenheim, NEH, ACLS (junior and senior), APS.

James O'Donnell became Provost of Georgetown University on July 1, 2002. He is a distinguished scholar and recognized innovator in the application of networked information technology in higher education. In addition to his duties as Provost, O'Donnell is a member of the faculty of Georgetown's classics department and is president-elect of the American Philological Association, the

primary professional association for classicists in the United States and Canada. O'Donnell has published widely and lectured extensively on the cultural history of the late antique Mediterranean world and the application of technology in higher education. In 2000, he chaired a National Academy of Science expert study group reviewing the role of information technology in the services and strategies of the Library of Congress; this report was published as LC21: A Digital Strategy for the Library of Congress. He is the author of five books, including a three-volume edition of Augustine's Confessions, and he is now writing another with the working title What Augustine Didn't Confess. In 1990, O'Donnell co-founded the Bryn Mawr Classical Review, the second on-line scholarly journal ever created in the humanities. He is a Trustee of the National Humanities Center and has also served as a Councillor of the Medieval Academy of America. Prior to his positions at the University of Pennsylvania, O'Donnell taught at Bryn Mawr College, The Catholic University of America and Cornell University. He has also held visiting appointments at Johns Hopkins University, the University of Washington and Yale University. O'Donnell came to Georgetown University from the University of Pennsylvania, where he served as Vice Provost for Information Systems and Computing and as a Professor of Classical Studies. He earned a bachelor's degree Phi Beta Kappa and was elected Latin Salutatorian at Princeton University in 1972. He earned his doctorate from Yale University in 1975.

Susan Parry is a PhD candidate in the Department of Philosophy at the University of Minnesota and work as a Research Assistant at the University's Center for Bioethics. Her research interests are in bioethics and philosophy of science. She's writing a dissertation that examines different ways that patient desires shape the practice of medicine.

Christopher S. Peebles is an anthropologist by training and an information technologist by happenstance. He currently serves Indiana University in several capacities. Until June 30, 2003 he was Associate Vice President for Research and Academic Computing and Dean for Information Technology. He continues as Associate Vice President for Information Technologies and has responsibility for working with the Chancellors and Vice Chancellors for Information Technology at the regional campuses of Indiana University. He is Professor of Anthropology and Director of the Glenn A. Black Laboratory of Archaeology. He also has appointments in the Program for Cognitive Science and in the School of Informatics. He teaches courses in contemporary culture change, the role of historical methods in anthropological research, and the prehistories of North America and northern Europe. He has been involved in the development of information technology for over forty years and has used computers in his research and teaching throughout his academic career. His interest in formal organizations and their culture led to considerations of corporate success and failure and the role of quality in corporate performance. These interests, in turn, led to his role in working as a part of the management team to bring quality and cost management programs to University Computing Services and its successor University Information Technology Services at Indiana University. Peebles holds degrees from the University of Chicago (AB, philosophy and anthropology, 1963) and the University of California at Santa Barbara (PhD, anthropology, 1974). He has taught at the University of Windsor and the

University of Michigan; he has been Visiting Professor of Cultural Prehistory the University of Amsterdam and Visiting Professor of Anthropology at Northwestern University and Penn State University; he has been Adjunct Professor of Anthropology at the University of Alabama and Adjunct Professor of Geology at the University of Miami. He is a pilot with over three decades of experience in aerial photography, remote sensing, and mapping.

Noah Pickus is the Associate Director of the Kenan Institute for Ethics at Duke University and an Adjunct Associate Professor of Public Policy at the Sanford Institute of Public Policy. His scholarly interests include normative and policy issues concerning citizenship and nationalism and he has written widely on a variety of issues including ethics and civic engagement, biotechnology and innovation, regional economic development, and immigration. His book on immigration and American nationalism is forthcoming from Princeton University Press in 2005. Dr. Pickus has consulted for a range of public and private entities, including PricewaterhouseCoopers, the Pew Charitable Trusts, the Smith-Richardson Foundation, the Department of Homeland Security, and the A. Philip Randolph Educational Fund. He is currently a Senior Policy Advisor to the Arbor Group, consultants to innovation-driven companies and communities. Dr. Pickus received his Bachelors degree from Wesleyan University and his PhD from Princeton University.

Roy Rosenzweig is Mark and Barbara Fried Professor of History & New Media at George Mason University, where he also heads the Center on History and New Media (CHNM). He is the co-author, with Elizabeth Blackmar, of The Park and the People: A History of Central Park, which won several awards including the 1993 Historic Preservation Book Award and the 1993 Urban History Association Prize for Best Book on North American Urban History. He also co-authored (with David Thelen) The Presence of the Past: Popular Uses of History in American Life, which has won prizes from the Center for Historic Preservation and the American Association for State and Local History. He was co-author of the CD-ROM, Who Built America?, which won James Harvey Robinson Prize of American Historical Association for its "outstanding contribution to the teaching and learning of history." His other books include Eight Hours for What We Will: Workers and Leisure in an Industrial City, 1870-1920 (Cambridge University Press) and edited volumes on history museums (History Museums in the United States: A Critical Assessment), history and the public (Presenting the Past: Essays on History and the Public), history teaching (Experiments in History Teaching), oral history (Government and the Arts in 1930s America), and recent history (A Companion to Post-1945 America). He has been the recipient of a Guggenheim Fellowship and has lectured in Australia as a Fulbright Professor. He currently serves as Vice-President for Research of the American Historical Association. As founder and director of CHNM, he is involved in a number of different digital history projects including the website, History Matters: The U.S. Survey Course on the Web as well as projects on the French Revolution, the history of science and technology, world history, and the September 11, 2001 attacks. All of these are available through the CHNM web site (http://chnm.gmu.edu). His work in digital history was recognized in 2003 with the Richard W. Lyman Award (awarded by the National Humanities Center and the Rockefeller Foundation) for "outstanding

achievement in the use of information technology to advance scholarship and teaching in the humanities."

Brian Schrag is Executive Secretary of the Association for Practical and Professional Ethics. His PhD is in philosophy and he has taught philosophy, particularly ethics, for 30 years. Schrag works in a variety of areas in practical ethics. For the past seven years he directed a NSF funded project "Graduate Research Ethics Education." In 2002, he co-directed, at Indiana University, a NSF funded conference: Using Web-Based Curriculum for Teaching Research Ethics. That conference resulted in a set of 14 papers forthcoming in a special issue of Science and Engineering Ethics. His paper in that collection is entitled "Pedagogical Objectives in Teaching Research Ethics in Science and Engineering: Implications for Web-Based Education."

Melissa Seymour is a PhD candidate in the department of philosophy at Indiana University. Her interests include contemporary ethics, as well as social and political philosophy. Her dissertation, On Reasonable and Unreasonable Demands: Defending a Kantian Account of Required Beneficence, is an attempt to articulate the scope of the duty to care. She is writing under the direction of Marcia Baron and plans to graduate in the spring of 2006. Seymour was recently awarded a Dolores Zohrab Liebmann fellowship.

Abby Smith is the director of programs at the Council on Library and Information Resources (CLIR) in Washington, D.C. She joined CLIR in 1997 to develop and manage collaborative work with library and archival institutions to ensure long-term access to our cultural and intellectual heritage. Before that, she worked at the Library of Congress, first as a consultant to the special collections research divisions, then coordinating several cultural and academic programs. She holds a doctoral degree in history from Harvard University and has taught at Harvard and Johns Hopkins Universities. Her recent publications include: Access in the Future Tense; New Model Scholarship: How Will It Survive?; Strategies for Building Digitized Collections; The Evidence in Hand: Report of the Task Force on the Artifact in Library Collections; and Authenticity in the Digital Environment.

Suzanne E. Thorin is the Ruth Lilly University Dean of University Libraries and Associate Vice President for Digital Library Development at Indiana University. The IU Bloomington Libraries, with combined holdings of nearly 6.5 million volumes, rank 12th in the Association of Research Libraries. An active researcher in the field of digital libraries, Suzanne directs a number of projects as associate vice president. These projects cover such areas as digital repositories for faculty publications, the integration of digital library services with instructional technology, and the expansion of common electronic library resources available to all IU campuses. Thorin holds a bachelor's degree in music education from North Park College in Chicago (1963) and master's degrees in music history and literature (1964) and in library science (1968) from the University of Michigan.

Diane Walker is Deputy University Librarian at the University of Virginia (UVa). She came to UVa as Music Librarian in 1984, and has also served as

Coordinator for the Education, Fine Arts, and Music Libraries, and as Associate University Librarian for User Services and Collections. Walker holds masters degrees in musicology from the University of Iowa and in library and information science from the University of Illinois. Before arriving at UVa, she help positions in the music libraries at the University of Illinois and the State University of New York at Buffalo. She is a past President of the Music Library Association and has also served as a member-at-large on the board of directors and as Treasurer of the Association.

Donald J. Waters is the Program Officer for Scholarly Communications at The Andrew W. Mellon Foundation. Before joining the Foundation, he served as the first Director of the Digital Library Federation (1997-1999), as Associate University Librarian at Yale University (1993-1997), and in a variety of other positions at the Computer Center, the School of Management, and the University Library at Yale. Waters graduated with a Bachelor's degree in American Studies from the University of Maryland, College Park in 1973. In 1982, he received his PhD in Anthropology from Yale University. Waters conducted his dissertation research on the political economy of artisanry in Guyana, South America. He has edited a collection of African-American folklore from the Hampton Institute in a volume entitled Strange Ways and Sweet Dreams. He is also the author of numerous articles and presentations on library and especially digital library, subjects. In 1995-96, he co-chaired the Task Force on Archiving of Digital Information and was the editor and a principal author of the Task Force Report.

Amanda Watson is the University of Virginia Library's first CLIR Post Doctoral Fellow in the Humanities. Amanda received her PhD in English from University of Michigan (2003) where she taught extensively and was involved in the Early English Books Online (EEBO) project. While at the University of Virginia she would like to become involved in the creation of digital versions of primary source texts to be used for teaching and research.

Chad Wayner is a graduate student in the Department of Religious Studies at UVa, preparing to enter his third year of coursework. He received his B.A. from Calvin College in Grand Rapids, MI, graduating with honors in political science and philosophy. Following his graduation from Calvin, he received a grant from the John Templeton Foundation to participate in an extended faculty seminar exploring the implications that recent advances in evolutionary psychology may have for perennial issues in theology and practical ethics.

Patricia H. Werhane is the Wicklander Chair of Business Ethics and Director of the Institute for Business and Professional Ethics at DePaul University and Peter and Adeline Ruffin Professor of Business Ethics and Senior Fellow at of the Olsson Center for Applied Ethics in the Darden School at the University of Virginia. She was formerly the Wirtenberger Professor of Business Ethics at Loyola University Chicago. She has been a Rockefeller Fellow at Dartmouth, Arthur Andersen Visiting Professor at the University of Cambridge, and Erskine Visiting Fellow at the University of Canterbury (New Zealand). Professor Werhane has published numerous articles and is the author or editor of fifteen books including Ethical Issues in Business (with T. Donaldson and Margaret

Cording, seventh edition), Persons, Rights and Corporations, Adam Smith and His Legacy for Modern Capitalism, and Moral Imagination and Managerial Decision-Making with Oxford University Press. Her latest book is Employment and Employee Rights (with Tara J. Radin and Norman Bowie) is with Blackwell's. She is the founder and former Editor-in-Chief of Business Ethics Quarterly, the journal of the Society for Business Ethics.

Steve Wheatley is the Vice President of the American Council of Learned Societies (ACLS). Before joining ACLS seventeen years ago as Director of the American Studies Program, he taught history at the University of Chicago where he was also Dean of Students in the Public Policy Committee and, before that, Assistant to the Dean of the (Graduate) Social Sciences Division. He holds a BA from Columbia University and MA and PhD degrees in history from the University of Chicago. He is the author of, among other works, The Politics of Philanthropy: Abraham Flexner and Medical Education (University of Wisconsin Press, 1988) and a new introduction to Raymond Fosdick's The Story of the Rockefeller Foundation (Transaction Books, 1988), and the editor (with Katz, Greenberg and Oliviero) of Constitutionalism and Democracy: Transitions in the Contemporary World (Oxford University Press, 1993). He has served as a consultant to the Ford Foundation, the Carnegie Corporation of New York and the Lilly Endowment, Inc., and as a member of the Doctoral Fellows Advisory Committee of the Indiana University Center on Philanthropy and as a member of the Task Force on the Artifact of the Council on Library and Information Resources. He is a member of the Academic Advisory Council of the Rockefeller Archive Center of Rockefeller University and an adjunct faculty member at New York University.

Kate Wittenberg is Director of the Electronic Publishing Initiative at Columbia (EPIC). EPIC seeks to create new editorial, organizational and business models for the development of scholarly and educational resources in the digital environment. These projects attempt to create relationships among scholars, technologists, publishers, librarians, and students that move beyond the organizational and disciplinary categories within the traditional university infrastructure. Kate serves as director for the electronic publications Columbia International Affairs Online (CIAO), Columbia Earthscape, the Gutenberg-e online history publication, and Digital Anthropology Resources for Teaching (DART). Kate also serves as Principal Investigator for the National Science Digital Library Core Integration project. Kate's work focuses in particular on the creation of sustainable business plans for digital scholarship and education, digital rights management, collaborative organizational models, and the evaluation of use and costs of scholarly and educational digital resources. Kate writes and speaks frequently on the topics of scholarly communication in the online environment and digital publishing.

Karin Wittenborg has been University Librarian for UVa since 1993. She has established the first development program for the library, and has recently completed a successful library campaign, raising $37 million. Prior to coming to UVa, Wittenborg held professional positions at UCLA, Stanford and the State University of New York. In 1981-82, she was a management intern in the MIT libraries. She serves on the Advisory Council for Stanford's Academic

Computing and Libraries, Brown University's Committee on Information Resources, and on the Executive Committee of the Digital Library Federation. She has consulted for Rice, Wesleyan, University of Miami and Florida International University. She is a frequent speaker at conferences. She received a BA from Brown University and an MLS from SUNY-Buffalo.

**SCHOLARLY COMMUNICATION INSTITUTE 3:
DIGITAL HUMANITIES**

July 17-19, 2005

**Scholarly Communication Institute
Edited by Amy Harbur and Diane Walker**

With funding from The Andrew W. Mellon Foundation, the three CLIR Scholarly Communication Institutes (SCI) held in 2003, 2004, and 2005 have focused on ways to "organize institutional and discipline-based strategies for advancing the state of scholarly communication." In the interest of catalyzing the development of digital scholarship, the institutes have convened scholars, librarians, technologists, publishers, academic officers, and others for short periods of intensive discussions and demonstrations of new methods of scholarly communication made possible by information technologies.

The first SCI focused on opportunities and obstacles facing digital scholarship. The 2004 Institute focused on the field of practical ethics and introduced traditionally oriented ethicists to the potential of digital technologies to advance core disciplinary agendas and to explore opportunities for inter-institutional collaborations. Three practical ethics experiments are now underway at Minnesota, Indiana, and U.Va. These ethicists, in conjunction with colleagues from Georgetown, will continue their discussions and collaborations in 2006. In 2005, the Institute focused broadly on digital humanities and invited experienced digital scholars to grapple with challenges of sustaining their scholarship and spreading the scholarly practices they have developed in the digital realm.

Common themes in all the institutes are:
1. the need to establish the importance of digital humanities in a very competitive and resource-strapped academic milieu;
2. the necessity of collaboration internally and inter-institutionally;
3. the importance of rethinking promotion and tenure in a new environment;
4. balancing intellectual property and copyright in the digital age to advance educational and research uses;
5. the urgent need for leadership at many levels; and
6. the need to resolve scalability and sustainability issues.

SCI III: Setting the framework

The sessions began with remarks from Stanley Katz and Donald Waters about the importance of digital humanities, the challenges to its development, and the trends emerging among certain leading fields. Katz emphasized that the "pre-digital" staples of scholarly communication—monographs, articles, and references materials—have given way in the digital realm to listservs, wikis, blogs, and databases. The streams of publication producing validated, peer-reviewed scholarship have not kept pace with these developments. Given the nature of these changes in communication practices, retrofitting the old (publishing e-monographs, for example) is not enough. A fundamental retooling is in order—if not for our sakes then certainly for our graduate students—and this demands new organizational models for scholarly communication.

Waters followed with a discussion of why digital humanities matters: new technologies are expanding our observational and analytical capacities and thus expanding our powers to address the "grand challenges" of our age.

Digital humanities are in fact technology-enabled applications of the most traditional activities that we associate with rigorous scholarship: discovering evidence, aggregating it, arranging and editing it for use, analyzing and synthesizing it, and disseminating the results through reports and teaching. But digital scholars are working in substantively different knowledge environments that would not be practical or even possible using traditional print-based methods. These environments are constructed by and for teams of scholars in collaboration with librarians, technologists, computer scientists, and others. Further development of these environments and their content for the humanities encounter significant legal barriers related to intellectual property, require significant curation expertise, and the development of new technologies and organizational commitments for sustainability. The data resources are valuable in direct proportion to their being aggregated, recombined, and reprocessed through computational means and across different domains. Ultimately, digital scholarship is significant because it brings us face-to-face with forces of change that require an all-hands-on deck effort of intellectual energy and courage to ask and answer some fundamental questions about the mission of our institutions.

SCI III: Emerging trends: the view from the ground

Using the specific examples presented by scholars and practitioners, the group explored what demands digital scholarship places on supporting infrastructures and what actions must be taken by whom in order to build that supporting knowledge environment. To begin with, scholars require digital information sources that are "repurposeable." There is an urgent need to convert masses of analog materials to digital so that we can preserve and disseminate historical objects, creating access to the normally inaccessible.

Some questioned what the ultimate significance of this kind of work is in general: are we talking about new ways of doing traditional scholarly activities, or is there more to it than that? Is technology enhancing teaching and if so, how do we know? How do we measure the impact? At the same time that some were asking about how real the changes are, others asserted that something

quite powerful is going on, and they were far more interested in exploring the questions of who decides what gets digitized and what sources are made more accessible. Access seems so important a phenomenon, one with so much power, that there was some fear expressed that sub-disciplines that were not well represented in both primary and secondary sources online were in fact disadvantaged.

SCI III: Sustainability

Participants identified the factors that promised sustainability over the long term, as well as those that loom as potential threats, either in the short term or the long. To flourish, digital scholarship must be valued by faculty and administrators within the academy. For example, in some institutions digital scholarship has raised the profile of academic departments, attracted new types of graduate students, attracted outside funding, and garnered (inter) national visibility. The faculty must be committed to digital scholarship and feel they own it. It cannot be seen as something done at the margins.

Funding is a perennial issue especially in digital scholarship. While some digital initiatives have adequate and reliable funding from their institutions most are operating on soft money, not knowing whether additional money will be available in the following year. Digital scholarship is more expensive than traditional humanities scholarship and requires the scale of institutional commitment often associated with lab scientists' start up programs.

These presentations prompted several participants to home in on emerging and fundamental changes in the roles of scholars in this landscape. Is it now going to be their job to "worry about technology?" How will that relate to their intellectual agendas? And as one librarian commented, the concerns are not only about how to sustain these new modes of scholarship, but whether and how they will scale? Will scholars really become actively involved in production in ways unprecedented in the print world? If so, what support will they need from librarians and technologists? One scholar responded that this is precisely what scholars should and must be doing now, that republishing the core sources in digital form is, in effect, the new scholarship. But the experience of others was more like this: when one college studied what faculty wanted, the response was "a clear wish for a dry-cleaning model: we bring to you, drop it off and pick it up clean!"

There was some tension between the call—largely by librarians—for a close adherence to standards in order to make this new scholarship scalable and sustainable; and the response of at least some scholars that adherence to standards "risks losing everything that's special and valuable about digital scholarship." But the successful models, such as the human genome project, are those in which the professional, academic needs of the scholars align with their technological requirements; adherence to standards is part of "good lab technique."

Several participants argued that many of the current barriers that are lumped into "sustainability" are illusory: if we were better able to articulate what value

humanities brings to a community beyond our narrow interests, and if we acknowledge that all digital programs are built by large-scale collaborations, not solo flights of fancy, then we would be able to secure the scale of funding necessary to turn projects into programs. We are underselling the importance of humanities to the well-being of mankind, something we cannot accuse the better-funded scientists of. The future of humanities scholarship depends directly on us and our leadership.

SCI III: Scholarship in the Digital Age: Opportunities and Challenges

In his closing remarks, James Hilton drove home the need to redouble our efforts to push a digital humanities agenda: the future of all scholarship, indeed of all communication, is digital. We are undergoing fundamental disruptions in the academy, and scholarly communication is only one element of the underlying academic structure that is being transformed. He warned that, in his view, the greatest threat to the academy in these changes is the emergence of the pure property view of ideas. Our culture has shifted dramatically towards owners and away from promoting access and learning. We need scholarly publishing models in the academy that reinforce the ideas of sharing. University presses have strayed from the academic mission, for perfectly understandable economic reasons, and cannot survive under the current business model. The largest investment a university makes is to provide the space for the community to meet in the free exchange of ideas. Successful university presses will reinvent themselves to serve their institution's core mission. Hilton concluded by urging that the massive disruption produced by new information technologies calls for bold experiments, but conceded that bold experiments can be risky for individuals in the academy. Libraries can be points of leverage for bold action. Libraries have the opportunity to reduce costs and take control of scholarly publishing and to do so in ways that preserve the culture of sharing and mitigate against the culture of ownership. The university is fundamentally about providing the ecology to encourage experimentation.

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PARTICIPANTS

Adams, Milton
Milton Adams is Professor of Biomedical Engineering and Vice Provost for
Academic Programs, University of Virginia. He received the BS in electrical
engineering from Virginia Tech in 1971 and the PhD in biomedical engineering
from the University of Virginia in 1976. Following a NIH Postdoctoral Fellowship
in the Trauma Center at Albany Medical College, he has been in the department
of Biomedical Engineering since 1978. His research has been in mechanisms of
control of the cardiopulmonary systems; most recently in control of a new left
ventricular assist pump, or artificial heart. He is a Fellow of the American
Institute for Medical and Biological Engineering and of the Biomedical
Engineering Society. He was awarded several teaching awards at the University
of Virginia and teaches graduate and undergraduate courses in biomedical
engineering.

Bernheim, Ruth Gaare
Ruth Gaare Bernheim is the Executive Director of the University of Virginia's
Institute for Practical Ethics and an Assistant Professor of Medical Education.
She earned her law degree at the University of Virginia in 1980 and went on to
get a Masters in Public Health in 1993 at the Johns Hopkins University School
of Public Health. Gaare Hernheim then worked as a Professor in the School of
Public Health at Johns Hopkins from 1994-1999 and became Associate Director
of the Johns Hopkins Bioethics Institute in 1995, serving in that position until
1998.

Bonn, Maria
Maria Bonn has a 1990 PhD in American Literature from SUNY Buffalo where
her work was focused on twentieth century American literature. After several
years teaching and writing as an itinerant academic, she acquired a Masters of
Information Science from the University of Michigan School of Information.
Since 1997, she has worked for the University of Michigan, first as an Interface
Specialist for Digital Library Collections, then in Digital Library Program
Development and, most intensively as the head of the Library's scholarly
publishing effort. In this latter role, she is responsible both for the production of

electronic books and journals and for broadly developing the role of the Library in scholarly communication.

Cameron, Tamara
Tamara Cameron is the Programmer Analyst for the Chymistry of Isaac Newton, a digital edition of Isaac Newton's alchemical writings, where she is responsible for designing and developing web software for manuscript access, retrieval and display. Previously she worked as a developer on non-profit and commercial web sites, most recently as an E-Commerce Specialist for the Irish airline Aer Lingus. She holds a BS in Theatre Performance, and is currently pursuing dual Masters degrees in library and information science at Indiana University

Childress, James
James F. Childress is the John Allen Hollingsworth Professor of Ethics and Professor of Medical Education at the University of Virginia, where he teaches in the Department of Religious Studies and directs the Institute for Practical Ethics and Public Life. Childress is the author of numerous articles and several books in ethics, including Principles of Biomedical Ethics (with Tom L. Beauchamp), now in its fifth edition and translated into several languages; Practical Reasoning in Bioethics, and Moral Responsibility in Conflicts, along with articles and books in several areas of ethics. Childress has been very active in the public policy arena, for example, as a member of the presidentially-appointed National Bioethics Advisory Commission1996-2001. He is also an elected member of the Institute of Medicine and a fellow of the American Academy of Arts and Sciences, as well as a fellow of the Hastings Center. In 2002, he received the University of Virginia's highest honor The Thomas Jefferson Award, and in 2004, he received the Life-Time Achievement Award from the American Society for Bioethics and Humanities.

Cohen, Daniel
Daniel J. Cohen is an assistant Professor of History at George Mason University and the Director of Research Projects at the Center for History and News Media. His research interests are in the history of science (particularly mathematics), European and American intellectual history, and the intersection of history and computing. He received his bachelor's degree from Princeton University, his master's from Harvard University, and his doctorate from Yale University in 1999. He is the co-author with Roy Rosenzweig of Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web (Philadelphia: University of Pennsylvania Press, forthcoming in 2005), and has published articles and book chapters on the history of mathematics and religion, the teaching of history, and the future of history in a digital age.

Davenport, Nancy
Nancy Davenport is the Presidency of CLIR following a career at the Library of Congress. She left LC as the Director for Acquisitions, after having served as Chief of two special collections divisions. Earlier in her career she was involved in policy analysis for the Congress

Dimunation, Mark
Mark Dimunation was appointed Chief of the Rare Book and Special Collections

Division at the Library of Congress in 1998. As Chief, Mr. Dimunation is responsible for the development and management of the Rare Book Collection, the largest collection of rare books in North America. In 2004 Mr. Dimunation was appointed Assistant Director for Special Collections and now oversees eight other divisions in addition to Rare Books. He came to the Library of Congress from Cornell University, where he had served as Curator of Rare Books and Associate Director for Collections in the Division of Rare and Manuscript Collections, and taught in the English Department, since 1991. Mr. Dimunation had his start with rare books when he was appointed the Assistant Chief of Acquisitions at The Bancroft Library at the University of California, Berkeley. He served in that position from 1981 until 1983, when he was hired as the Rare Book Librarian and Assistant Chief for Special Collections at Stanford University. Mr. Dimunation currently serves on the CLIR Board.

Dublin, Thomas
Thomas Dublin is a Professor of History at the State University of New York at Binghamton. He is the author or editor of eight books, including Women at Work: The Transformation of Work and Community in Lowell, Massachusetts, 1826-1869, winner of the Bancroft Prize and the Merle Curti Award in 1980. Since 1997 he has been co-director (with Kathryn Kish Sklar) of the Women and Social Movements in the United States, a major online website in U.S Women's History. After five years as a student-based educational project, the co-editors began a partnership with Alexander Street Press to publish the website as an online quarterly journal/website and database. The website has been coming out as a quarterly since March 2003 as a subscription website.

Edwards, Richard
Richard Edwards is a Professor of Economics and Fellow in the Center for Great Plains Studies at the University of Nebraska, where he also served as Senior Vice Chancellor [provost] from 1997 to 2004. Previously he was Professor and Chair of the Department of Economics at the University of Massachusetts-Amherst and Dean of Arts and Sciences at the University of Kentucky. An economic historian (PhD Harvard, 1972), he has published a dozen books and approximately fifty articles on various social science and history topics; he has also written a number of articles on higher education, including, with David Shulenburger "The High Cost of Scholarly Journals (and What to Do About It)," Change, November-December, 2003. Among his current projects is a collaboration with the National Homestead Monument to preserve and make more accessible, through microfilming and digitization, the approximately two million homesteading files currently existing only in original paper form at the National Archives and Records Administration.

Frischer, Bernard
Bernard Frischer earned his BA (1971) and PhD (1975) in Classical Studies. He has had fellowships from the Woodrow Wilson Foundation, the Michigan Society of Fellows, the American Academy in Rome, the ACLS (twice), the Center for Advanced Study in the Visual Arts, and the Loeb Classical Library. Trained in both philology and archaeology, Frischer is the author of four books and many articles on the Classical world and its survival. He started applying computer technology to his scholarship and teaching in the early 1980s.

Furlough, Mike
Director, Digital Research and Instructional Services

Grossberg, Michael
Michael Grossberg is the Sally Reahard Professor of History and Professor of Law at Indiana University. He is also the Editor of the American Historical Review. His research focuses on the relationship between law and society in American history, particularly the intersection of law and the family. He has written a number of books and articles on legal and social history including a recently published co-edited volume, American Public Life and the Historical Imagination. He is currently working on a history of child protection in the United States to be published by Harvard University Press and is co-editing The Cambridge History of Law in the United States. Grossberg has held fellowships from the Guggenheim Foundation, the National Endowment of the Humanities, the American Council of Learned Societies, the Newberry Library, the American Bar Foundation, and has been a Fellow at the National Humanities Center. He has also published articles on scholarly editing and is a founder of the History Cooperative, an electronic publishing project devoted to historical scholarship. Through the Cooperative he has overseen the development of projects in digital scholarship and participated in the creation of policies on such issues as the review of electronic books and the archiving of digital journals.

Halbert, Martin
Martin Halbert is the Director for Library Systems and the Executive Director for the MetaScholar Initiative at Emory University. He is a member of the NSDL Policy Committee, chairs the DLF Aquifer Services Working Group, and leads the NDIIPP MetaArchive Project. He is currently a principal investigator on the NSF OCKHAM Project (http://www.ockham.org), on DLF's IMLS OAI Project, and on a Mellon automated ontology generation project. Halbert is also Principal Advisor for the open access internet journal and scholarly forum, Southern Spaces.

Hamlin, Scott
Scott Hamlin is a Faculty Technology Liaison in the Library and Information Services (LIS) division at Wheaton College. He works primarily with faculty, staff, and students in departments from the Humanities, Arts, and Education to create and sustain effective learning experiences, support the goals of the college curriculum, and increase information fluency through the use of technology.

Harbur, Amy

Amy Harbur obtained her MLIS degree from the Catholic University of America in May 2003. She is now a Program Associate at the Council on Library and Information Resources, where she is involved in several projects including the Bill & Melinda Gates Access to Learning Award and the Mellon Fellowships for Dissertation Research in the Humanities in Original Sources.

Henry, Charles
Charles Henry is currently Vice Provost and University Librarian at Rice University. He is in charge of the library, the digital library initiatives, data

application centers, and academic information technology. Previously he was director of libraries at Vassar College and assistant director, Division of Humanities and History, at Columbia University. Dr. Henry has served on the Steering Committee for the Coalition for Networked Information, is past president of the National Initiative for a Networked Cultural Heritage, is on the Advisory Committee for the new International University-Bremen, and a member of the Steering Committee for the Digital Library Federation in Washington. He chairs the Committee on Computer Science and the Humanities, sponsored by the American Council of Learned Societies and the Computer Science Telecommunications Board of the National Academy of Engineering. In 2001, Henry accepted six year appointment to the Texas Online Authority, Henry received his PhD from Columbia University and has published widely in the field of technology and higher education.

Hilton, James
Dr. Hilton is responsible for activities related to instructional technology, academic computing, intellectual property and copyright and the associated legal issues, as well as a wide array of academic issues that fall under the purview of the Provost's Office. He is also currently serving as the Interim University Librarian at the University Michigan. Since 1985, Dr. Hilton has been a member of the faculty at the University of Michigan in the Psychology Department and the Institute for Social Research. He has published extensively in the areas of person perception, stereotypes, and the psychology of suspicion. With Charles W. Perdue, he published "Mind Matters," a multimedia CD-ROM that combines text with interactive exercises and multimedia elements and places them in a navigational structure designed to nurture exploration. Dr. Hilton is a three-time recipient of the LS&A Excellence in Education, has been named an Arthur F. Thurnau Professor (1997-2000), and received the Class of 1923 Memorial Teaching Award. Among the courses that he teaches are graduate courses on person perception and social cognition and undergraduate courses that include Introductory Psychology and Social Psychology. He served as the Chair of Undergraduate Studies in Psychology between 1991 and 2000 and has been fellow of the Sweetland Writing Center and the CIC Academic Leadership Program. Dr. Hilton received a BA in Psychology from the University of Texas in 1981 and a PhD from the social psychology program at Princeton University in 1985.

Holleran, Ted
Ted Holleran is a senior American History major at Wheaton College. He first became involved in the TEI project while taking a class with Professor Kathryn Tomasek in which the students worked with segments from Maria Wood's journal. Currently, Ted is working with Eliza Baylies Wheaton's journals with other members of the Wheaton faculty.

Hughes, William
William Hughes earned a BA from Boston University and an MA from the University of Chicago. He is currently a doctoral candidate in English at UVa, researching the publication and reception history of Shakespeare and designing digital tools to make such histories available for scholarly and pedagogical use.

For five years, he's worked as the Project Manager for Jerome McGann's Rossetti Archive.

Kaiserlian, Penelope
Penelope Kaiserlian has been director of the University of Virginia Press since 2001. Before that, she was Associate Director and Editorial Director of the University of Chicago Press for many years where she was editor and publisher of many award-winning books. She has been involved in digital humanities publishing for over a decade, starting with creation a web-based edition of The Founders' Constitution, collaboration between the University of Chicago Press and the Liberty Fund. She is now principal investigator for an Andrew W. Mellon Foundation grant, "An Electronic Imprint at the University of Virginia Press: building a Digital Rotunda." She has just been named President-Elect of the Association of American University Presses.

Katz, Stanley
Stanley Katz is President Emeritus of the American Council of Learned Societies, the leading organization in humanistic scholarship and education in the United States. Mr. Katz graduated magna cum laude from Harvard University in 1955 with a major in English History and Literature. He received his MS from Harvard in American History in 1959 and his PhD in the same field from Harvard in 1961. He attended Harvard Law School 1969-1970. His recent research focuses upon the relationship of the United States to the international human rights regime. Formerly Class pf 1921 Bicentennial Professor of the History of American Law and Liberty at Princeton University, Mr. Katz is a leading expert on American legal and constitutional history, and on philanthropy and non-profit institutions. The author and editor of numerous books and articles, Mr. Katz has served as President of the Organization of American Historians and the American Society for Legal History and as Vice President of the Research Division of the American Historical Association. He is a member of the Board of Trustees of the Newberry Library, the Social Science Research Council, the Copyright Clearance Center and numerous other institutions. He is a Commissioner of the National Historic Publications and Records Commission. He also currently serves as Chair of the American Council of Learned Societies/Social Science Research Council Working Group on Cuba. Katz is a member of the New Jersey Council for the Humanities, the American Antiquarian Society, the American Philosophical Society; a Fellow of the American Society for Legal History, the American Academy of Arts and Sciences, and the Society of American Historians; and a Corresponding Member of the Massachusetts Historical Society. He has honorary degrees from several universities.

Lucier, Richard
Richard Lucier has developed and led many efforts in the application of technology and the principles of librarianship to new forms and models of scholarly communications. As the Founding Director of the Laboratory for Applied Research in Academic Information at The Johns Hopkins Medical Institutions, he partnered with: (1) the National Library of Medicine (NLM) and The Johns Hopkins University Press to create and make available in real-time the continuously-updated Online Mendelian Inheritance in Man and to assist

the Press in biannual print publications of the reference work; (2) the Howard Hughes Medical Institute in the creation of the Genome Data Base in support of the Human Genome Initiative; (3) William & Wilkins Press and the NLM in developing an online version of the Principals of Ambulatory Medicine with updating modules for 70+ authors and 3 editors; and (4) Nina Matheson to articulate the 'knowledge management' model, with funding from what was then the Council on Library Resources. As the University Librarian at the University of California San Francisco and Founding Director of the Center for Knowledge Management (CKM), he partnered with AT&T and 20 major medical publishers in creating the Red Sage Electronic Journal Service, one of the first examples of a critical mass of medical journals made available online. The Red Sage Group were pioneers in beginning to address many of the political, technical, and economic issues important to librarians, publishers, and scholars. The CKM also developed the Tobacco Control Archive which serves as a major resource for scholars and the legal community in disseminating academic information in this area and litigating against the major tobacco companies. As the Founding Director of the California Digital Library, he worked closely with his UC colleagues across all 10 campuses to create a successful digital library which includes an scholarly publishing arm, eScholarship. When he was Librarian of Dartmouth College, his staff developed the Digital Library at Dartmouth, one module of which contains tools for scholarly publishing used in new humanities journals such as Linguistic Discovery. In 2004, Richard decided to devote more time to interests he had neglected for many years namely music, the environment, and involvement in political causes which promote equality and justice. He currently resides on Cape Cod and continues to follow the progress of research libraries, scholars, and others in this arena.

Matthews, Linda
Linda Matthews is vice provost and director of libraries at Emory University. Previously, she held the position of director of special collections and archives at Emory. She holds a PhD in history from Duke University and a library degree from Emory University. During a career in archives and archives administration, she served on the Council of the Society of American Archivists, as chair of the copyright task force for SAA, and is a Fellow of the Society. As director of libraries, she is part of a group in the Digital Library Federation's Aquifer pilot project working to develop tools for improved access to digital resources created by research libraries.

McGann, Jerome
John Stewart Bryan Professor of English

Metz, Terry
Terry Metz serves as Vice President for Library and Information Services at Wheaton College in Norton, Massachusetts, where he assumed his current duties in August 2001. For the prior decade, he served various roles in the library and computing units at Carleton College, Northfield, MN, including interim appointments as both College Librarian and Director of Administrative Computing. Mr. Metz received BA degrees in business administration and geography from Gustavus Adophus College in 1980, and an MA in library science from the University of Minnesota in 1985. From 1986-1992 he served

as Consortium Manager for Cooperating Libraries in Consortium (CLIC), a nonprofit consortium of seven private liberal arts college libraries in Minneapolis/St. Paul, MN. Prior to working for CLIC, he was employed as a librarian at Hamline University in St. Paul. Professionally, Mr. Metz is particularly interested in issues related to the integration of campus information services (e.g., libraries, information technology units, media services, etc.), especially at liberal arts colleges; collaborative initiatives among liberal arts colleges; and library and information technology support of learning and teaching. Mr. Metz co-authored with Chris Ferguson, Dean of Information Resources at Pacific Lutheran University, a chapter entitled, "From Tribes to Community: On Leadership Issues Related to the Integration of Library and Computing," in Leadership, Higher Education, and the Information Age: a New Era for Information Technology and Libraries, Carrie E. Regenstein and Barbara L. Dewey, eds., Neal-Schuman Publishers, 2003. His most recent publication, "Greater than the Sum of Its Parts: The Integrated IT/Library Organization," was co-authored with Mr. Ferguson and Gene Spencer, Associate Vice President for Information Services and Resources at Bucknell University. This article appeared in the May/June 2004 issue of EDUCAUSE Review pp. 39-46.

Newman, William
Bill Newman is a historian of medieval and early modern science and the PI on "The Chymistry of Isaac Newton," a web-based edition of the famous scientist's voluminous but little known writings on alchemy. Newman has also had extensive experience in non-digital text editing, as his dissertation included a critical edition of the widely disseminated Summa perfectionist of Gerber, a Latin alchemical forgery of the thirteenth century.

Nichols, Stephen
Stephen Nichols is the James M. Beall Professor of French and Humanities and Chair of the Romance Languages and Literatures Department at The John Hopkins University, also served as Director of the School of Criticism and Theory, based at Cornell, from 1995-2000. He was interim Director of the Sheridan Libraries at Johns Hopkins in 1994-95. A specialist in medieval literature, art, and history, he received the Modern Language Association's James Russell Lowell Prize for an outstanding book by an MLA author in 1984 for Romanesque Signs: Early Medieval Narrative and Iconography. In 1991, The New Philology, conceived and edited by Nichols for the Medieval Academy of America, was honored by the Council of Editors of Learned Journals. In 1992, the University of Geneva conferred on him the title of Docteur ès Lettres, honoris causa, while the French Minister of Culture made him Chevalier de l'Ordre des Arts et Lettres in 1999. He is a Fellow of the Medieval Academy of America, an Honorary Senior Fellow of the School of Criticism and Theory, and has written or edited nineteen books. He has been visiting professor at a number of universities in North America, and abroad, and has held the following fellowships: Guggenheim, NEH, ACLS (junior and senior), APS. He is co-director, with Sayeed Choudhury of the Milton S. Eisenhower Library, of the Hopkins Digital Romance of the Rose Project.

O'Brien, Eugene
Eugene O'Brien is Executive Associate Dean and Professor of Composition in

the Indiana University School of Music, Bloomington. The recipient of fellowships and awards from the American Academy in Rome, the American Academy of Arts and Letters, the John Simon Guggenheim Foundation, the Serge Koussevitzky Foundation in the Library of congress, the Fromm Foundation at Harvard, and others. His works have been widely performed and recorded by numerous American and European artists and ensembles. His responsibilities as executive associate the overall supervision of the school's research centers, including the Latin American Music Center and the Center for the History of Music Theory and Literature, and general assistance to music faculty in their research projects. He serves as a member of the committee of research associate deans for the Office of Vice President for Research.

Pastorino, Cesare
Cesare Pastorino is an advanced graduate student in the Department of History and Philosophy of Science at Indiana University. Cesare has been working extensively on "The Chymistry of Isaac Newton," a web-based edition of Newton's alchemical writings. In addition to transcribing and tagging Newton's "Index chemicus," a concordance to many alchemical texts that Newton compiled over a long period of time, Cesare is preparing an online cross-referencing system for the Newton project with the "Index chemicus" at its core.

Sites, Martha
Associate University Librarian for Information Technology

Skinner, Katherine
Katherine Skinner is the Scholarly Communications Analyst for the MetaScholar Initiative based at Emory University. She also currently serves as the Managing Editor of Southern Spaces, a peer-reviewed, open access internet journal and scholarly forum (http://www.southernspaces.org). A PhD candidate in The Graduate Institute of the Liberal Arts of Emory University (a degree expected in 2005), she is exploring relationships between music, social activism, and the commercial structures of the US music industry in a dissertation titled "That We All Be Free: Music and Social Change."

Staples, Thornton
Director, Digital Library Research and Development

Sterk, Claire
Claire E. Sterk is Charles Howard Candler Professor of Public Health and Senior Vice Provost for Academic Planning and Faculty Development at Emory University. She received her doctorate in cultural anthropology from the University of Utrecht and a PhD in Sociology from Erasmus University (Rotterdam, the Netherlands). Following two-years as a Visiting Scientist at the Centers for Disease Control and Prevention, she entered US academia. Most recently, she served as Chair of the Department of Behavioral Sciences and Health Education and as Associate Dean for Research at Emory Rollins School of Public Health. Her research has been on substance abuse and mental health, HIV/AIDS, community-based health interventions and visual ethnography. She is a member of the Advisory Council of the National Institute on Drug Abuse and a Fellow of the Society for Applied Anthropology. She has published three

books and numerous articles and book chapters. In addition, she has received extensive funding from the agencies such as the National Institutes of Health and the Foundation for Child Development.

Thorin, Suzanne
Suzanne E. Thorin is the Ruth Lilly University Dean of University Libraries and Associate Vice President for Digital Library Development at Indiana University. The IU Bloomington Libraries, with combined holdings of over 6.5 million volumes, rank 12th in the Association of Research Libraries. An active researcher in the field of digital libraries, Suzanne directs a number of projects as associate vice president. These projects cover such areas as digital repositories for faculty publications, the integration of digital library services with instructional technology, and the expansion of common electronic library resources available to all IU campuses. Thorin holds a bachelor's degree in music education from North Park College in Chicago and master's degrees in music history and literature and in library science from the University of Michigan.

Tomasek, Kathryn
Kathryn Tomasek teaches 19th-century US History and Women's Studies at Wheaton College in Norton Massachusetts. She has explored numerous uses of technology in teaching since she arrived at Wheaton in 1992. Her current interests lie in using transcription and encoding to help undergraduates gain experience with primary sources. Her scholarly research includes work on women in utopian movements, the fiction of Louisa May Alcott, and sewing as women's work.

Tucker, Herbert
Herbert Tucker is John C. Coleman Professor, and Director of Graduate Studies, in the English department at Virginia. He formerly taught at Michigan and Northwestern, having taken the PhD at Yale. He has written and edited several books on Victorian literature, with a special focus on poetry. At Virginia he is coeditor of the University Press series in Victorian literature and culture, and an associate editor of the journal New Literary History.

Tullos, Allen
Prof. Allen Tullos is a native of Alabama who teaches American Studies at Emory University in Atlanta. He has worked as a co-producer and sound recordist for documentary films, and has published a great deal of scholarly and journalistic writing, especially about the US South. He is a member of the Editorial Board of the multimedia internet journal SouthernSpaces.org (http://southernspaces.org).

Walker, William
William Walker is the University Librarian and Professor at the University of Miami, Coral Gables, Florida and the Andrew W. Mellow Director Emeritus of the New York Public Library. Walker joined the University of Miami's administration in October 2003. Prior to coming to Miami, William Walker was Senior Vice President and Andrew W. Mellon Director for the Research Libraries at the New York Public Library. Appointed to this position in 1993, he oversaw

four major programs of NYPL, including the main branch at Fifth Avenue and 42nd Street (the Humanities and Social Sciences Library), the Library for the Performing Arts at Lincoln Center, the Schomburg Center for Research in Black Culture in Harlem, and the Science, Industry, and Business Library in mid-town Manhattan. Walker oversaw building projects and renovations totaling over $150M while at NYPL, has worked as a pioneer to re-engineer library operations, and has been an early adaptor of information technologies. From 1990 to 1992, he was the Director of NYPL's Science, Industry, and Business Library project which resulted in a $100M high-tech library retrofitted into the former B. Altman Building. Professor Walker received a BS in Education from Lock Haven University with a concentration in French and an AMLS in 1974 from the University of Michigan. During the first fifteen years of his career, he worked as a medical library administrator at the University of Illinois in Chicago and the Medical Library Center of New York. In this latter position, he directed a not-for-profit consortium that provided innovative automation and document delivery services to the medical schools and research centers in the New York Metropolitan Area. Currently, at the University of Miami, William Walker is working with the Library's faculty and staff to design programs that insure that the Library is a centerpiece for scholarly communication, university instruction, and cultural life. Plans include a $40M expansion of the University's main library, including a high-end workspace for graduate students and faculty, digital classrooms, and a state-of-the-art collections research center.

Walker, Diane
Diane Walker is Deputy University Librarian at the University of Virginia. She came to UVa as Music Librarian in 1984, and has also served as Coordinator for the Education, Fine Arts, and Music Libraries, and as Associate University Librarian for User Services and Collections. Walker holds masters degrees in musicology from the University of Iowa and in library and information science from the University of Illinois. Before arriving at UVa, she held positions in the music libraries at the University of Illinois and the State University of New York at Buffalo. She is a past President of the Music Library Association and has also served as a member-at-large on the board of directors and as Treasurer of the Association.

Walsh, John A.
John Walsh is the Associate Director for Projects and Services of the Indiana University Digital Library Program, where he coordinates the activities of the program and manages select projects and initiatives. He has been working with digital text and image collections and other digital library content creation and delivery for over ten years. His main area of expertise is in the development of XML full-text literary and humanities digital collections. Current projects include The Swinburne Project, a digital collection of the works of nineteenth-century British poet Algernon Charles Swinburne, the Chemistry of Isaac Newton, a digital edition of Isaac Newton's alchemical writings; and CBML, or Comic Book Markup Language, a TEI-based XML vocabulary for encoding comic books and graphic novels. He has a PhD in English literature and is active in the digital humanities field, researching the application of XML-related technologies to the preservation, presentation, and analysis of literary texts and pop culture media.

Walter, Katherine L.

Katherine L. Walter co-directs the University of Nebraska-Lincoln (UNL)'s Center for Digital Research in the Humanities with Dr. Kenneth M. Price, and is chair of Digital Initiatives & Special Collections (DISC) in the UNL Libraries. Currently, Walter is co-principal investigator of the Virtual Archive of Walt Whitman's Manuscripts project funded by the Institute of Museum and Library Services, and co-directs The Journals of the Lewis and Clark Expedition Online Edition on behalf of the UNL Libraries, the University of Nebraska Press, and the Center for Great Plains Studies. The latter project is funded by the National Endowment for the Humanities Division of Public Programs. For more information on Digital Research in the Humanities, see http://cdrh.unl.edu.

Waters, Donald

Donald J. Waters is the Program Officer for Scholarly Communications at The Andrew W. Mellon Foundation. Before joining the Foundation, he served as the first Director of the Digital Library Federation (1997-1999), as Associate University Librarian at Yale University (1993-1997), and in a variety of other positions at the Computer Center, the School of Management, and the University Library at Yale. Waters graduated with a Bachelor's degree in American Studies from the University of Maryland, College Park in 1973. In 1982, he received his PhD in Anthropology from Yale University. Waters conducted his dissertation research on the political economy of artisanry in Guyana, South America. He has edited a collection of African-American folklore from the Hampton Institute in a volume entitled Strange Ways and Sweet Dreams. In 1995-96, he co-chaired the Task Force of the Commission on Preservation and Access and the Research Libraries Group on Archiving of Digital Information, and was the editor and a principal author of the Task Force Report. He is a fellow of the American Association for the Advancement of Science and is the author of numerous articles and presentations on libraries, digital libraries, digital preservation, and scholarly communications.

Wessel, Madelyn

Madelyn Wessel is Special Advisor to the University Librarian, focusing on a broad range of library system legal issues including intellectual property, copyright, licensing, and special concerns arising in the area of digital scholarship. Her most recent presentation, "Copyright in a Digital Age," was to the Visual Resources Association Annual Summer Education Institute at Duke University. Ms. Wessel as an adjunct professor at the Curry Graduate School of Education and also taught a seminar in constitutional practice at the University of Virginia School of Law. She is a member of the bars of Virginia, Massachusetts, New Hampshire, and Oregon. Ms. Wessel served as Deputy and later Chief Deputy City Attorney for Portland, Oregon from1989-2001, practicing in a wide range of areas including constitutional, employment, civil rights and government relations. Prior to her position in Portland, Ms. Wessel served as an Assistant Attorney General and Chief of the Opinions Division, Massachusetts Department of Justice. Ms. Wessel holds a BA from Swarthmore College and a JD from Boston University.

Wheatley, Steve
Steven C. Wheatley is the Vice President of the American Council of Learned Societies (ACLS). Before joining ACLS seventeen years ago as Director of the American Studies Program, he taught history at the University of Chicago where he was also Dean of Students in the Public Policy Committee and, before that, Assistant to the Dean of the (Graduate) Social Sciences Division. He holds a BA from Columbia University and MA and PhD degrees in history from the University of Chicago. He is the author of, among other works, The Politics of Philanthropy: Abraham Flexner and Medical Education (University of Wisconsin Press, 1988) and a new introduction to Raymond Fosdick's The Story of the Rockefeller Foundation (Transaction Books, 1988), and the editor (with Katz, Greenberg and Oliviero) of Constitutionalism and Democracy: Transitions in the Contemporary World (Oxford University Press, 1993). He has served as a consultant to the Ford Foundation, the Carnegie Corporation of New York and the Lilly Endowment, Inc., and as a member of the Doctoral Fellows Advisory Committee of the Indiana University Center on Philanthropy and as a member of the Task Force on the Artifact of the Council on Library and Information Resources. He is currently a member of the Academic Advisory Council of the Rockefeller Archive Center of Rockefeller University and an Adjunct Professor at New York University.

Wittenberg, Kate
Kate Wittenberg is Director of the Electronic Publishing Initiative at Columbia (EPIC). EPIC is a collaborative initiative in digital publishing involving the Columbia University Press, the Columbia Libraries and Academic Information Systems. Its mission is to create new models of scholarly and educational publications through the use of digital technologies in an integrated research and production environment. Working with scholars at Columbia and other leading research and educational institutions, EPIC aims to make these digital publications self-sustaining through subscription licenses to institutions and individual uses. Kate serves as project director for the electronic publications Columbia International Affairs Online (CIAO), Columbia Earthscape, the Gutenberg-e Online History Project, and Digital Anthropology Resources for Teaching (DART).

Wittenborg, Karin
Karin Wittenborg has been University Librarian for UVa since 1993. She established the first development program for the library, and has recently completed a successful library campaign, raising $37 million. Prior to coming to UVa, Wittenborg held professional positions at UCLA, Stanford, and the State University of New York. In 1981-82 she was a management intern in the MIT libraries. She serves on the Advisory Council for Stanford's Academic Computing and Libraries, Brown University's Committee on Information Resources, and on the Executive Committee of the Digital Library Federation. She has consulted for Rice, Wesleyan, University of Miami, and Florida International University. She is a frequent speaker at conferences. She received a BA from Brown and an MLS from SUNY-Buffalo.

SCHOLARLY COMMUNICATION INSTITUTE 4

ARCHITECTURAL HISTORY

July 30 – August 1, 2006

Abby Smith Rumsey, Senior Advisor
Scholarly Communication Institute

Introduction

The Scholarly Communications Institute at the University of Virginia provides an opportunity for leaders in humanities disciplines, academic libraries, information technologies, and higher education administration to develop and implement strategies that advance scholarship in the context of the ongoing digital revolution. Knowing that it takes long-term institutional support to sustain digital scholarship over time, we have looked at strategies based on institutional strengths and commitments to scholarship (SCI3). SCI has also explored strategies grounded in the particular needs of a discipline: in the case of SCI 2, it was the emerging discipline of practical ethics.

The term "scholarly communication" is often used as shorthand for peer-reviewed publishing, seen as the ultimate goal of research and the primary way a discipline advances. But at SCI, the focus of attention is on the process of communication itself, in the broadest sense: how scholars find information, create knowledge, and communicate among themselves, with students, and beyond the academy with other audiences. For SCI, what is at stake is not just the article or the monograph. It is the creation and dissemination of knowledge that constitute the core value of scholarship to society. Crucial actors in these activities have been libraries and publishing houses, academic administration and funding bodies, information technologists and, of course, audience. And it is the sum of what they together create that should be sustained over time, even as the specific roles that individual actors play may change. It has become a commonplace that traditional print-based models of peer-reviewed publication are failing under pressures from economic demands, technological innovations, and expanding copyright monopolies. But more significantly, they are also failing to live up to the needs of current humanities scholarship, with its expanding appetite for non-print sources, its increased desire for having real-time impact on contemporary life, and the drive to recruit the best, most creative, and boldest minds to the professions that promote humanistic inquiry.

What new forms of scholarly communication that better support scholarship can we could model and test?

Why Architectural History

Architectural history presents a rich opportunity to engage the fundamental challenges that SCI addresses. This field is at an inflection point, ready to move on with developing new ways of documenting the built environment, of interrogating sources, of publishing and disseminating the results of research, of developing new ways of teaching, and of nurturing and rewarding the next generation of scholars. The field has always presented special challenges for a print-based model of scholarly communication, and many of the needs and aspirations of scholars and teachers in the field—the need to have access to images for research and to use images freely, prodigiously, in presentation of scholarship – have been unmet. The problems of scholarly publication in art and architectural history were the subject of studies undertaken earlier in 2006 by Hilary Ballon, Mariët Westermann, and Lawrence McGill. These studies are indicative of a field that is aware of itself in the context of a larger dynamic information environment, seeking to clarify the external influences that shape disciplinary practices, and positioning itself to change in light of what it discovers through such an environmental scan. The field also has a learned society, the Society of Architectural Historians, through which it can effect an agenda and which is self-consciously working to appropriate whatever advantages new information technologies can bring to their field—in presentation, research, teaching, publication, outreach to new audiences, within and outside the academy. The society and its premier journal, the Journal of the Society of Architectural Historians (JSAH), are actively seeking ways to retool themselves for the new information environment.

Finally, the field itself focuses on what has always been a human endeavor at the forefront of engineering and technology, populated by men and women who aspire to have a strong positive impact on humans and the way they live and inhabit the earth. At its best, architecture puts technology at the service of humanity, and endeavors to maintain a balance between means—materials, techniques, engineering-and ends—the environment that induces to better habitation. To paraphrase Bill Mitchell in his article about complexity in the digital age, architects are a curious combination of artists, who have visions of what can be, and engineers, who focus on problem-solving and making those visions wonderful places of dwelling. We take that mix of purpose and pragmatism as our starting point.

The strategy of the organizers was to invite distinguished professionals from a wide variety of domains—scholars and teachers, curators and librarians, academic officers and service providers, lawyers and funders—to get as many good ideas on the table as possible, explore them in group discussions, and then arrive at a series of targeted actions to implement over the coming 18-24 months that will move the field ahead concretely.

Grand Challenges

We began our institute with an attempt to identify the so-called grand challenges facing humanities scholars and scholarly communication in the early 21st century, with critical focus on the core intellectual agenda of architectural historians and the impact of the availability, use, and opportunities of new communication strategies and information technologies. What possibilities are there for fundamental transformation of our disciplines? What aspirations do we have that seem to exceed our grasp, but only just? What could be realized by concerted and collective action, an infusion of resources, and disciplined execution? What ambitions, if achieved, would have a beneficial and transformative effect spread across populations that were not directly involved in the effort? To identify some desirable possibilities, the perspectives of senior scholar, academic officer, library director, and learned society executive were presented to the group. Panelists and audience were asked to face the future both as visionaries and as problem solvers.

A common view of the promises and the challenges that lie ahead in the next decade emerged, and both promise and challenge operate at various levels simultaneously—at the level of the individual scholar, of the academic organization, and of the entire humanistic enterprise as such.

First, there is a societal imperative for humanists to "engage the digital," as most culture is now created digitally. Engaging the digital puts the humanities at the very center of the digital revolution, and offers the chance to infuse the Web and other information environments with the knowledge and values of the humanities. As university and college campuses build up their core infrastructures to support digitally-enabled research and learning, it becomes imperative that humanities faculty demand more resources for technology and for libraries, publishers, and the professionals who staff them. In terms of architectural history, the use of digital technologies by current architects and engineers is overwhelming and has vastly changed the capacities for building. (Frank Geary's billowy facades, from the Guggenheim Museum in Bilboa to the Disney Music Center in Los Angeles, are possibly the best known exemplars of those technical advances, but they are by no means unique.) There is a disciplinary as well as societal imperative to engage the digital.

Another promise of new modes of scholarly communication for humanists is to make real the rhetoric of interdisciplinarity and help us to achieve what one scholar reminded us was the age-old dream of humanists: homo universalis, an individual with well-rounded appreciation for the many dimensions of the human experience. Digital technology has the power to reunite the disparate fields and subfields of humanities, as well as link them to the sciences. It can do that in part by putting into a commonly accessible multimedia library all the primary resources and interpretive literature that supports inquiry. And it can give us shared tools to use and present those sources.

New technologies can also expedite the emerging turn to disciplinary foundations, the re-engagement with primary sources in all media. For architectural historians and archaeologists, there is the specific promise of closer encounters with the basic techniques, fabrics, and sources of the built environment.

The challenges to fulfilling these promises are formidable, of course, but hardly intractable. To achieve these goals, architectural history as a discipline, individual scholars, and the organizations that support them, from universities and colleges to libraries, museums, and publishing firms, need to change they way they work, change the scale of their horizons, encourage greater risk-taking, and engage the critical information policy debates of our time, specifically, the encroachment of property law in the expression and exchange of ideas.

Collaboration and Collective Action

Among the most powerful IT applications are those that provide a platform for collaboration—in many cases, actually demand collaboration. The technology as such is costly, and a number of skilled professionals with various expertise need to be on hand in the production mode, as well as the dissemination mode (unless one posts some simple formats to a Web site). But the working mode of the humanities has to this juncture not been amenable to collaborative work. Everyone recognizes that the traditional culture of humanities scholarship rewards soloists and provides very few incentives for talented folks to join the chorus, no matter how resounding the sound of many voices together. The good news is that reward systems are human-crafted, and, while not simple, it is entirely within the power of a discipline, driven by peer-agreed standards, to change that reward system.

As Barry Bergdoll pointed out, architectural history carries within it aspects of social and economic history, the history of ideas and technology, and the multiple perspectives embedded in archaeology. With the field's natural "resistance to the book," it must develop incentives and rewards for collaborative enterprises simply in order to make room for the very best scholarship. Buildings are designed and constructed by collaboratives of many professionals. In the case of archaeologists, buildings and their sites are studied in teams. In the course of such team work, they have pioneered the use of some of the most powerful tools, such as GIS and visualization. Archaeologists like Willeke Wendrich and Nick Eiteljorg testified to the power of collaboration to foster interdisciplinarity. Robert Kirkbride, who relies on collaboration both in the teaching and in the design process itself, spoke of its power to overcome the disadvantages that specialization can bring.

Scale and Scoping

Until recently, the economics of the academy has been built around scarcity. As long as information resources were physical objects that could be used only in one time and at one place, people would cluster physically around those resources, and institutions would compete among themselves on the basis of access to scarce resources. This is obviously no longer the case. We now face the challenge, as James Hilton phrased it, of managing abundance, not scarcity—though financial resources to do so remain at essentially the same level. Now everyone has to cooperate in order to provide key resources critical to one and all. Now institutions such as libraries need to be in cooperation with

others to build image and text libraries. They also need to collaborate on preservation of sources so that there is no undesirable overlap and redundancy as the volume of resources that demand stewardship expand. How do we scale up to meet the need? How do we make the tough choices between competing demands?

From the scholar's point of view, the problem of abundance is in some ways even more unmanageable with current tools and ways of doing business. The sheer volume of information and knowledge that demand attention can be disorienting and ultimately deprive us of the time and space for reflection. On the one hand we demand access to more and more information. On the other hand, we have fewer and fewer means to sift through it to find quality. For better or for worse, our library catalogs, as they exist today, are not up to the task, especially for visual resources. Again, this is an area where the ability to find the right partner or set of partners to work with can help to cut through the confusing plethora of choices. Access to expertise across campus and across disciplines is very important. Many identified the library as the natural physical locus of such expertise, as it is a neutral ("non-partisan") institution on campus.

Innovation and Continuity

For better or for worse, we find ourselves in a rapidly changing information landscape where innovation and information policy are driven by the entertainment industry and the life sciences. As humanists, we have no choice but to keep pace, if we wish to keep current our understanding of human experience. That is why, as Steve Wheatley summarized it, for humanities writ large "the grand challenge is creating environments and communities where digital scholars can work in spite of organizational and cultural challenges to making changes." We are able to point to many grand projects that technology is already able to accomplish—a universal digital library is one—but the conservative culture of the academy (in addition to market-driven policies surrounding the exchange of knowledge) remains a major barrier.

Universities themselves, including their museums and libraries, are among the primary agents of cultural continuity in our society and that is an important societal function. It is hard both to foster innovation and sustain valuable legacies. To take one example, as Deanna Marcum noted, much money is tied up in the legacy collections that libraries are charged with maintaining, and that equates to less money to invest in the future. Abandoning the commitment to preservation is not an option. Yet on some campuses the library is emerging as a key center of innovation. While difficult to achieve a balance between innovation and continuity within essentially the same budget, campus organizations need to open doors to the future without shutting out the past.

For the faculty, the challenges are just as daunting: the need to maintain the highest standards in teaching and scholarship, which are grounded on the conserving mechanisms of peer review and consensus-building; and the need to take risks in the pursuit of knowledge, and to reward younger colleagues for doing so. Where is it safe to experiment and risk failure? Willeke Wendrich

described a solution that faculty created at UCLA when they established the UCLA Digital Humanities Incubator Group (http://projects.cdh.ucla.edu/udhig/). This is a place where people from different disciplines can gather to share learning and to experiment ("we keep a space for anarchy, too"). This center is one place—libraries and technology centers may play the same role on other campuses-where researchers can push technology and information resources in order to discover their possibilities.

IP and the Myth of Sharing

Several panelists cautioned that—somewhat surprisingly, given the lip service paid in the academy to openness and sharing—intellectual property (IP) is emerging as a looming challenge to collaboration and the growth of knowledge. Although originally designed to promote the circulation of information and ideas, copyright is increasingly used to restrict access to them. We know how this narrowing of access operates with commercial products, access to which is so crucial to architectural history and indeed to all who study human culture. But now we are discovering that an awareness of IP and concerns over who "owns" an expression is creeping into the classroom. Hilton noted that the incoming generation of students is increasingly worried about protecting their own intellectual property. So, increasingly, are faculty. With campus lawyers ever more cautious about faculty claiming fair use when accessing material, and faculty and students in some cases trending toward possessiveness with regard to granting access, it is hard to determine how to define, let alone defend, the educational enterprise and scholarship in particular as a public good.

In sum, all challenges to developing new models of scholarly communication involve collective action, the pooling of resources across departments and across campuses for the collective good. Benefits that accrue are felt at all levels—individual, organizational, and disciplinary and are liberating. Neither the promises we identified nor the challenges are necessarily exclusive to architectural history. Indeed drawing connections between the specific needs of the field such as a sharable image database and a broader national agenda can help us identify solutions. It can also lead us to new funding sources that solve such problems as scaling up services, scoping of activities, and lowering intellectual property barriers. With this grounding in the general, the following sessions were devoted to the specific needs and opportunities facing those who study the built environment.

Tools for Digital Scholarship: Foundations for New Methods and Knowledge in Architectural History

The purpose of this session was to identify the tools and information resources that architectural historians use or wish they had at their disposal; to look at the problems encountered when using them; to explore the infrastructure that supports these tools and resources, locally and nationally, and see what might be missing; and discuss how to create priorities for development when there are competing needs.

The common themes that emerged were:

- the need for commonly developed and shared tools
- the need for open and sharable resources that are sustained over time
- the need for location-based expertise, that is, for research centers, laboratories, and centers, staffed by librarians and IT experts, where people can experiment with new technologies, risk failure for the sake of acquiring knowledge, and share experience and expertise.

Tools

What are the investigative tools that are most important for architectural historians and archaeologists? The panelists concurred that the exploration and faithful representation of data in a rich and richly documented context is fundamental. Side-by-side comparison, visualizing change over time, keeping integral the historical layers in which a structure is or was found, the representation of three or four dimensions, the ready accessibility of documentation (metadata) about the data—these are all crucial for sound scholarship. With the advent of GIS (geographic information systems), one now has the possibility of representing the four dimensions critical for analyzing the built environment and how it changes over time. Georeferencing key data has now emerged as an important need. Such reference points would provide crucial (and completely standardized!) metadata. These would not obviate the need for descriptive metadata of other kinds for visual resources, but they may constitute a priority for investment because such metadata are useful to all different types of research communities. They would not pose conflicting or competing requirements that would then demand the creation of additional metadata crosswalks. (Ann Whiteside noted that 80 percent of the effort that goes into converting analog sources to digital lies in the creation of the metadata.)

That said, tools that allow catalogers and users of digital content to describe data remain critical both to the creation of new content and the conversion of our important "legacy" (that is, analog) collections. Flickr was mentioned as a model of simplicity for such mark-up or "tagging" which, while not comparable to MARC cataloging in its complexity, goes a long way to the ideal of enabling researcher to share, describe, and contribute knowledge to image databases. As Thorny Staples cautioned, the perfect is the enemy of the good: simple tools now are always preferable to perfect tools sometime in the future.

Desirable tools would allow one to manipulate images readily (for comparison), to show change over time, even in some cases to represent three dimensions through virtual reality (these tools would additionally require the software, hardware, and the theater for playback). The tools we want will be able to address the essentially dynamic nature of buildings and allow us to ask questions that were not even thinkable a few years ago. For example, Diane Favro asked, can we determine how buildings were used at different times of the day and different days of the year?

Finally, we need to be thinking ahead—or, more precisely, thinking about today's architects and how we will be able to study their design processes. The widely used CAD (computer-assisted design) is going to be hard to preserve and render in the future. But daunting as that seems now, it is hardly the greatest challenge we face. Martha Thorne noted that a typical large architecture and design firm will use about 50 softwares, each proprietary, each on a rapid development cycle of its own.

Resources

The development of resources that are open and sharable—a desire articulated by all—is likewise a challenge that "calls for collective action," as Jeff Cohen put it. Such resources would range from rare book holdings and collected building documentation to reconstructions and personal image collections, comprising both images created during a research project and collected from third-party sources (the Web, a library database). We need to leverage these collecting activities to build shared databases. We also need platforms for better management of personal collections.

Building collections that are searchable, sharable, and well documented is not easy, especially for visual resources. They are expensive, demand more storage space and bandwidth than textual content, and usually require even more extensive negotiations for rights than text. Deciding who bears the costs of providing such databases is difficult. At present, we can anticipate that most arrangements risk creating a gap between the "haves" and the "have-nots." James Shulman cautioned that no one library or database will have it all. He advised that agreement within our own domain on some priorities for commonly shared and supported databases will make it easier for content providers to meet our demands. Coming to this agreement is an area where the Society of Architectural Historians, making common cause with the College Art Association, might gain some traction. Given the scale of the task, we need to recruit commercial and non-commercial third-parties to work with (Getty Images, ARTstor, Flickr).

As the breadth of enquiry in architectural history expands, it will be increasingly important to find and incorporate images of people using buildings. Hilary Ballon said the importance of social uses of space is a growing topic in architectural history. We also want tools that help us visualize evolution of building changes, that allow buildings to reveal their dynamic nature. And finally, we need tools that allow for multiple authorship.

Centers of Expertise

But how do we get there from here? Here again the notion of aggregation has powerful logic—not of images, in this case, but of expertise and funding resources. Centers for learning GIS emerged as one priority. So, too, was the development or modification of tools and learning how to use them. Cohen called for a center where one could find "mutual aids for coping with new technologies."

A Word for Common Sense

As Madelyn Wessel noted wryly, architecture is "particularly interesting" from a legal perspective because it deals with multiple media and multiple authorship. Digitization raises the stakes of intellectual property issues because of the increased potential for profligate access. And now enter universities, themselves players in copyright and intellectual property, especially in instances where the university has developed tools or claims rights in content. She warned that collaboration raises the issue of multiple authorship. To obviate problems, parties involved should the good sense to resolve licensing and other intellectual property issues at the start of a project. Collaborations can be like marriages: all parties rely ultimately on trust, but trust can be engendered by up-front ("prenuptial") agreements.

Publishing and Dissemination: New Scholarship, New Technologies, New Directions

Digital technologies create diverse opportunities and challenges for publication, both in the redesign of traditional publications and in the emergence of entirely new forms of publication. This session explored both, and paid special attention to renegotiating the delicate balance between supporting innovation and nurturing continuity. The ultimate question becomes how to open up a space for innovation within a culture that has developed such conservative mechanisms for assessing and rewarding quality of research results. And external to the research community lies an even more unyielding barrier to innovation than the cultural conservatism of the humanities: the growing constraints on access imposed by the contemporary copyright regime. That said, participants identified a number of areas under their control that could, if acted on, yield quick, decisive, beneficent results.

Hilary Ballon, incoming editor of the Journal of the Society of Architectural Historians, outlined the range of needs and possibilities before the discipline. First is the need for the monograph to be reinvented and reenergized, given that it remains, for the present, the gold standard for tenure. Next, there are additional possibilities for new modes of dissemination that will address the chronically unmet needs of those dependent on visual resources. New technologies would at least in theory make possible such things as catalogs that remain current with the state of knowledge, or a "networked article" that could have links to archival sources and not be bound by an arbitrary page limit. Something between an article (10,000 words) and a full-blown monograph (several hundred pages) is now possible and, one suspects, economically feasible as an electronic imprint.

Currency of publication is not a topic often touched on in gatherings of humanities scholars but it is certainly desirable among those who create, curate, and attend temporary exhibitions. What Ballon called "conversation projects" (responsive projects) such as exhibition reviews could be put up and receive real-time feedback during the life of an exhibition, rather than appear as the usual post-mortem appreciation or criticism. Finally, niche audiences,

which constitute most scholars who work deeply into a field or a topic, could benefit greatly from the (apparent) cost efficiencies of digital dissemination.

The Role of Publishers and Libraries

Whatever models of scholarly communication emerge, there are major implications for the institutions that undergird scholarly communication-publishers and libraries. Several publishers discussed their responses to the changing environment. Chuck Henry described how Rice University Press, which folded not too long ago, has been reborn as a digital-only imprint, focusing on a few fields that have been particularly disadvantaged by print and may flourish in a digital environment: art history (including architectural history), archaeology, and music. As the press comes online, they are preparing to tackle head on what they anticipate will be a significant obstacle to success, and that is the credibility of the imprint among scholars. To that end, Rice has engaged an editorial board and a peer-review editor. While they will attempt to innovate in technology and business models (outsourcing content management, print-on-demands services, and marketing and sales), they will conserve what is crucial to the academy—the peer vetting of scholarship. Michael Jensen related the experience of the National Academies Press, which has been a leader in providing open access to their research results while maintaining a viable business model. Since 1994 they have made their publications freely accessible on the Web (roughly 200 titles a year), which has resulted in an increased sales of hard-copies of those titles. They are able to give things away in "non-optimal" formats and use the free version as a form of marketing for the high-quality format that people prefer to use. As successful as this enterprise has proven so far, there is always the dilemma of having to remain open while maintaining stability—of content, of formats, of financial viability. In the publishing world especially, it seems, past performance is not necessarily a good indicator of future returns on investment.

In many ways, libraries would seem to bear the greatest burden in this rapidly changing environment. As service organizations, libraries are designed to be responsive to their clients, the faculty. Libraries have been the first to feel the destabilizing effects of new information technologies and are the most vulnerable in times of unpredictable change, built as they are to be conservative institutions. Yet they cannot wait to react, even if their faculty are slower to adapt to this new environment. Many libraries are already well on their way to developing the infrastructure to support and sustain digital scholarship over time. Knowing that libraries must continue to be the site of reliable and trustworthy preservation, absolutely foundational to scholarship, many research libraries are deploying digital repositories on their campuses. In addition, some libraries (we heard from the University of Virginia, UCLA, Columbia, MIT, the Library of Congress) are also modeling new roles for themselves in the chain of scholarly communication, becoming sites of technology development, of teaching digital literacy, and of access and dissemination of research outputs. As Mackenzie Smith of MIT Libraries said, the academy should start thinking about publications as "webs of resources." In this model, libraries, as the long-term stewards, hold the content; publishers and learned societies are aggregators of content, creating "overlay journals" by

linking content and adding value through peer vetting, filtering, packaging, and branding, content. A publication becomes a web of resources held together through an editorial process.

When it comes to primary resources, as opposed to secondary literature such as journals and monographs, the role of libraries and museums is considerably more challenging. Collecting, documenting, and preserving new formats is complex, and grappling with fragile, proprietary, ever-changing technologies such as CAD pose serious technical and IP challenges. As an example, Smith cited the CAD system used by Frank Gehry. Though in the process of collecting primary sources about his building at MIT, the library does not have access to what his office is doing. They would need physical and legal access to files mostly owned by the architect. At present there are no standards for incorporating these sources into publications, so decisions about curating them must be made in the dark. And the window for capturing and "freeze-drying" or "desiccating" any given format is about 5 years at the most.

Copyright

Everyone recognized what a stunning problem copyright presents to the growth of knowledge, though, as many kept saying, it was meant to stimulate, not stultify, that growth. The complexity of the law has grown to such an extent that two distinguished copyright lawyers presented and held the group nearly rapt with attention. What emerged from those discussions (one in the session about tools and resources, the other in the session about publishing) was the clear consensus that a common vocabulary that can be understood by lawyers and scholars alike in discussions of the law is needed. Next, members of the academy have to become more knowledgeable about intellectual property as part of their professional skill set; it is simply too intrinsic to the fate of scholarship today to be ignored or treated as someone else's area of responsibility. Finally, the best place to begin to achieve the above is to commence campus-wide discussions about the fundamental purpose of the copyright law and, at the departmental level, discussions about specific issues and questions that arise within a discipline.

Some general observations by Jeffrey Cunard in this session were that we are now in a rights-clearance/permission oriented culture. We are less able to rely on "fair use" now than before, as the academy's gatekeepers (such as general counsels) grow increasingly risk-averse. Rights embedded in works that are digitized are in some ways even more complicated (or raise higher risks) than objects born digital, as it can be very tricky to know who can claim rights in the work (let alone find the people or entities). The Copyright Terms Extension Act (CTEA) has radically reduced the number of works that will enter the public domain, posing special problems for anyone studying the twentieth century.

Moving Ahead

By the end of the second session on the fundamentals of scholarly communication, a common concern had emerged: that our habits of disciplinary practice, particularly in terms of archival or peer-reviewed

publication, threaten to impede real scholarship, open inquiry, and bold thinking. And primacy of the print also too often slams the door in the face of many talented gradate students. Senior scholars bemoaned the paradox that once upon a time, tenure was put into place to protect risk-takers in the academy. Now it operates to exclude them. Senior scholars could change the local departmental decisions about tenure "any old time we felt like it," as John Dobbins expressed it. "Most of us here have tenure and we decide who gets tenure. If digital scholarship counts for us, then this issue shouldn't be as big as it is." With that, he offered to raise this issue at his next departmental meeting.

The View from Campus: Current and Future Developments in Digital Architectural History

As new information technologies give rise to new research agendas and scholarly communication strategies, they are also changing the ways members of the higher education community interact on campus and across campuses. To get a sense of the variety of impacts felt on campus these days, we had three teams of institutionally-based innovators—senior and junior scholars, librarians, and technologists—report on how they are reacting to these challenges and opportunities through new campus alliances and extramural collaborations.

University of California, Los Angeles

The UCLA team reported that their work in the digital arena is a factor in attracting graduate students. Their Experiential Technologies Center [http://www.etc.ucla.edu/] promotes innovative technologies in humanities and social sciences. The ability of graduates students to have access to this resource gives UCLA a strategic edge in programmatic areas and in attracting gradate students. But the center also addresses some of the infrastructural problems that arise when deploying new information technologies, such as the scaling problem. For example, digital reconstructions are quite expensive, and investigators need to expand their funding base to be able to afford them. Such projects allow humanists access to larger grant sources, and in this case it makes funding graduate students possible (10 are currently supported this way). No culture of grants administration exists in the humanities departments, and the center, together with UDHIG, is incubating one. The center fosters natural—that is, project-based—collaboration with computer scientists and engineers. Departmental resources vary hugely, and Favro noted that it was really helpful in her work as a historian to be in the school of architecture, where she could communicate daily with practitioners and had access to better equipment and greater resources.

The UCLA team's description of their working environment highlighted what one called the large discrepancy between the "haves and have-nots" relating to digital access and know-how, between scientists and humanists, between big research universities and small colleges, and between first-world research centers and those in the third-world. What is our obligation to share these resources and how do we do so? The penetration of such high-end applications

as immersive environments is not deep among humanities faculty; only 6 percent of faculty use technology to go beyond typical everyday functions.

University of Virginia

Faculty on this team noted that UVa tends to be a somewhat balkanized campus, and digital issues are at least one area that really cut across all the departments. Furthermore, it is around technical infrastructure, centrally located at such places as the library—what Lisa Reilly termed a "non-partisan" site—that people can come together and collaborate. The faculty members, who came from several different departments, recognized that it is important for all sorts of reasons to network at the "top level," but it is hard to work out common interdisciplinary modes of work. Each discipline brings a fully developed worldview to table. Nonetheless, balkanized or not, Frazier Neiman contended, faculty must be driving the integration of digital technologies into centers of virtual study, and as they do so, these will become important sites of interaction, between teachers and students and as well between discipline-based experts.

A number of UVa faculty on the team are engaged in long-term digital projects, and it seemed appropriate to them that they now tackle the issue of accepting dissertations in digital formats and digitally based scholarship in tenure and promotion cases.

Columbia University

The Columbia group focused on the future of a unique university asset, the Avery Library of Art and Architecture, and what role it will play in the largely digital future of architectural history. There are plans afoot to bring certain treasures in the print collection into the digital realm. There are also conversations about how the Avery will be able to collect the born-digital course materials for contemporary architecture. The team, comprising a scholar, librarian, and technologist, talked about the specific challenge of developing a prospective program of documenting the university's campus expansion program in Manhattanville.

Gerald Beasley said that they anticipate lots of different sources, in different media, will be available to collect and, indeed, would come flooding in if they were to just open the spigot. How should they scope the collecting? The challenges include planning for long-term sustainability, for unpredictable uses of the sources by a variety of communities, and for a plethora of tools and formats that may not last too long and that are likely to be proprietary. In short, the challenge is to manage the abundance while documenting the design-process, preserving fragile content, and ensuring the archives' authenticity over time. The audience suggested that they start to work immediately on agreements with possible participants (what roles people will play, what expectations they can have for access, and so forth), and that they plan now for holding a significant portion of the sources in a "dark archive" for a period of time.

The Next Generation: The Perspective of Emerging Scholars

The next generation of scholars and their colleagues will ultimately determine the shape the discipline's response to the challenges enumerated above and move the frontiers of knowledge further. A panel of graduate students and scholars in the early stages of their careers were asked to respond to what they had heard, and to articulate both their long-term ambitions and the short-term actions that should be taken to make those visions possible. In desultory but persistent fashion, each session had surfaced a number of anxieties about graduate education, about how to recruit and retain the best minds and spirits to scholarship, and whether or not the system was capable at present of rewarding those who show the greatest promise, curiosity, and creativity. Another thread of concern that emerged was what one wit called the problem of "CPA": continual partial attention. There seems to be a generation of students who have lost touch with the traditions of creating long, sustained arguments, which have been the centerpiece of humanistic disciplines since the rise of the monograph. Yet another question that arose in each session was about whether or not the professional demands of scholarship, especially those surrounding professional training and education, publication, and tenure and promotion, serve to advance or inhibit first-class scholarship.

A common desideratum among younger scholars is a universally accessible digital library, something that appears technologically possible to create and would be positively transformative for all. Yet it is a long way from being realized for a host of complex reasons. A corollary observation is that "content is king," and so we should be putting more effort into the creation of content than into that of specialized metadata and tools. This generation of students has seen plenty of the "new great thing" come and go. They expressed the view that we should be making do with whatever tools we have and using what metadata we can, rather than spend great energies on perfecting these. Both are destined to be replaced rather rapidly by new, improved versions of the same. Content lives much longer. As Chris Johanson said, the most revolutionary tool would be a worldwide digital library. On the other hand, there is recognition that data without metadata has limited utility for scholarly inquiry.

Young scholars ticked off a number of what might be called unmet needs in their graduate education. Johanson mentioned the skill of project scoping (its own version of "managing abundance"), including knowing when to go after "low-hanging fruit" rather than focus (too much) on the big picture. Kelly Miller questioned why most students have to learn about technology outside the classroom. Panelists agreed that technology offers the possibility of asking and answering important new questions through representation of comparisons, such as a map of change over time or tempero-spatial representation of process and flow. Why wouldn't we want to do this? Why do we have to learn about all this technology outside the classroom? Why is all of this excluded from the process of credentialing when this is where the intellectual action is? Why are we urged at forums like this to collaborate but that is not part of our education and such behavior is not rewarded? And where is the space for experimentation and failure in our training?

On the subject of credentialing, more than one graduate student advised others to package their research so that it looks more traditional. Caroline Yerkes questioned the assumption that up-and-coming scholars will be the ones to lead the scholarly revolution, when they are the most vulnerable members of the academy. Are they to be forced into the position of leading a revolution in which they have everything to lose? Robert Kirkbride summed up the recurring theme of this panel as the coupling of "tenure and fear," at the same time as he offered an array of approaches he used in his classroom to "unleash his students" by working in teams, engaging in the design process as well as the critical process, and connecting students with the traditions of architecture as art and as a human-centered enterprise.

Next Steps

After exploring many dimensions of scholarly communication in architectural history, and taking into consideration both the promises of new models of communication to advance scholarship and the problems that arise in doing so, the group moved to develop an action plan. The first order of business was to identify leadership at several levels—institutional, disciplinary, and national.

Institutional leadership resides in academic departments, libraries, and academic administration, each a locus of power and of resources. Departments have power over the credentialing of innovation within the internal processes of hiring and promotion. They could effect change by developing accepted methods for peer review and rewarding digital scholarly production in hiring and promotion practices, as well as incorporating new modes of scholarly practice, such as team work, into graduate education training and the fostering of risk-taking behaviors. While the change in acceptance of digital outputs requires the active involvement of all scholars in the field in the final analysis, it has to be initiated and aggressively led on campuses by senior scholars within their departments. As for new modes of publishing and dissemination, scholars agreed that "we need to accept the libraries' invitation to consider the relationship of libraries to production of content, and engage with them to maintain and preserve scholarly products," as Pauline Saliga put it. They also asked the libraries to take a lead in educating all parties about legal issues. And finally, the all-important work of fostering collaboration and experimentation requires strong administrative support—money and time release, building space and technology infrastructure, all supported by a campus-wide ethos of experimentation in the interest of knowledge creation.

Disciplinary leadership is concentrated in learned societies and their publishing wings. The SAH leadership agreed to craft an action agenda based on some key challenges discussed here. They would put their journal to work to promote new modes of scholarly communication. The group was challenged to submit their own digital work to the journal. And SAH leadership said they would seek to partner with the CAA on such key issues as developing image databases and tools. SAH also takes seriously the need to educate its members about copyright and proposed using their annual meeting as a venue for such topics.

Bringing the agenda of architectural historians and archaeologists into the broader national program of advancing the humanities, bringing it closer to the public, requires a different focal length. There are needs that scholars in these fields share with those in other disciplines: the desire for centers to learn about GIS; the need for richer, more accessible aggregations of content; the adaptation of existing tools for humanities inquiry and presentation—these are all needs that map to the larger landscape of cyberinfrastructure for the humanists and social sciences that is emerging from the American Council of Learned Societies tasks force on cyberinfrastructure. Participants were urged to connect individual and disciplinary work to the larger social issues that move people—including funders—to pay attention. The burden is on us, some urged, to make the case about why doing our work better makes a difference to the larger community from whom we seek support and resources.

The SAH agreed to respond to the invitation extended at the close of the meeting by The Andrew W. Mellon Foundation to support the development of digital extensions to the JSAH. The executive committee of the SAH agreed to host a session at their annual meeting and that of the CAA on what had been learned at the SCI. The SAH also committed to looking further into development of a shared image database and to engage ARTstor in talks about possible collaboration or co-development. At the local level, John Dobbins agreed to raise the issue of recognition of digital scholarship in the tenure and promotion process within his own department at UVa. As we were reminded by our host, Karin Wittenborg, in the end it is results that matter.

**SCHOLARLY COMMUNICATION INSTITUTE 4:
ARCHITECTURAL HISTORY**

July 30 – August 1, 2006

PARTICIPANTS

Dean Abernathy
Associate Director, University of Virginia

Hilary Ballon
Hilary Ballon is professor of art history at Columbia University and editor of the *Journal of the Society Architectural Historians.* She has recently completed a Mellon-funded study of the State of Scholarly Publication in Art and Architectural History with Mariet Westermann (NYU), which addresses the untapped potential of electronic publication in art history. As JSAH editor she aims to create a digital extension of the journal.

Gerald Beasley
Gerald Beasley is Director of Avery Architectural & Fine Arts Library, Columbia University. He graduated from Oxford University and University College, London; worked from 1985 to 1991 at the British Architectural Library of the Royal Institute of British Architects (RIBA); from 1991 to 1994 at the Wellcome Institute for the History of Medicine, London; and from 1994-2004 at the Canadian Centre for Architecture, Montreal (CCA). Co-author of the RIBA's 5-volume bibliographical catalogue, Early Printed Books, 1478-1840, and co-editor of three catalogues of rare architectural books for the National Gallery of Art in Washington.

Barry Bergdoll
Barry Bergdoll has been teaching architectural history at Columbia since 1985 and has served since 2004 as Chairman of the Department of Art History there. Educated at Columbia and at Cambridge in art history, Bergdoll is currently the President of the Society of Architectural Historians. His numerous publications center on 19th and 20th century German and French architecture, he has also curated exhibitions—notably Mies in Berlin at MoMA (2001) together with Terrence Riley—and made films about architecture.

James Childress
James F. Childress (PhD, Yale, Religious Ethics) is the John Allen Hollingsworth Professor of Ethics at the University of Virginia, where he teaches

in the Department of Religious Studies and directs the Institute for Practical Ethics and Public Life. He is the author of numerous articles and several books in biomedical ethics and political ethics, among other areas. His books include Principles of Biomedical Ethics (with Tom L. Beauchamp), now in its fifth edition and translated into several languages; Priorities in Biomedical Ethics; Who Should Decide? Paternalism in Health Care; Practical Reasoning in Bioethics; Civil Disobedience and Political Obligation; and Moral Responsibility in Conflicts. Childress has been heavily involved in "public bioethics," serving as vice chair of the national Task Force on Organ Transplantation and a member of the Board of Directors of the United Network for Organ Sharing (UNOS), the UNOS Ethics Committee, the Recombinant DNA Advisory Committee, the Biomedical Ethics Advisory Committee, and several Data and Safety Monitoring Boards for NIH clinical trials. In 1996-2001, he was a member of the presidentially-appointed National Bioethics Advisory Commission, which issued reports on several topics, including human cloning and embryonic stem cell research. Childress is an elected member of the Institute of Medicine and a fellow of the American Academy of Arts and Sciences. He is also a fellow of the Hastings Center.

Kinney Clark
Kinney Clark is an architectural historian with the New Jersey State Historic Preservation Office, currently responsible for GIS and information management initiatives. His current focus in on creating comprehensive statewide cultural resources GIS data and developing enterprise data management solutions for cultural resources information. Kinney previously worked in the SHPO's transportation unit providing regulatory review of transportation projects under various federal and state regulations, and has been involved with developing architectural survey guidelines and local historic preservation guidance. He has an undergraduate degree in Business Administration from the University of Georgia, and is currently completing a Masters in Historic Preservation from UGA's College of Environment and Design.

Jeffrey Cohen
Jeffrey Cohen is senior lecturer in the Growth & Structure of Cities Program at Bryn Mawr College. His research has mostly focused on topics in 18th- and 19th-century American architectural history, including the work of architects Benjamin Latrobe, Frank Furness, and Wilson Eyre, on townhouses, early architectural drawings, and the evolution of the 19th-century downtown. In the digital realm he has worked on document-based databases, electronic exhibition projects, and several courses where students create research websites. He has participated in a number of collaborative projects, an alphabet soup of anagrams from the now-defunct NINCH and Academic Image Cooperative, to the steering/advisory committees for PAB (Philadelphia), Catena (Bard), and CLiMB (Columbia/U Md). Since 1996 he has chaired the SAH's Electronic Media Committee, which has arranged seven "Tools for Architectural Historians" sessions and built the SAH Image Exchange, a working pilot in posting digital images to be openly shared for teaching (a parallel to a similarly conceived VAFpie, being built with the Vernacular Architecture Forum).

Scott Craver

Scott Craver is an advanced graduate student in the History of Art and Architecture in the University of Virginia, whose doctoral dissertation is focused on purpose-built, mixed-use building complexes at ancient Pompeii and Herculaneum. He is interested in the impact of digital publishing on his present and future work, and on the disciplines of Classical Archaeology and Architectural History.

Jeffrey P. Cunard

Jeffrey Cunard, managing partner of the Washington, D.C. office, practices in the areas of information technology, intellectual property and communications law, including copyright litigation, joint ventures, privatizations, regulatory advice and e-commerce transactions, and US and international media and telecommunications law and he is an internationally recognized practitioner in the field of the Internet and cyberlaw. Mr. Cunard is the author of, a contributor to, and speaks widely on both communications and intellectual property law. With Debevoise partner, Bruce Keller, he is the co-author of Copyright Law: A Practitioner's Guide (2001-2005), published by Practising Law Institute. He also is the co-author of the "Obscenity and Indecency," "Copyright" and "Trademark and Unfair Competition Issues" chapters in Internet and Online Law (K. Stuckey, ed.) (Law Journal Seminars-Press 1999-2005) and annually co-authors a comprehensive summary of legal developments involving the Internet for the Practising Law Institute's Communications Law program. He is a major contributor to The Future of Software (1995), published by MIT Press, is a co-author of two books on international communications law, From Telecommunications to Electronic Services (1986) and The Telecom Mosaic (1988), both published by Butterworths, and is on the Board of Editors of e commerce Law & Strategy. With Mr. Keller, he both teaches a seminar at Harvard Law School, "Practical Lawyering: Internet-Related Issues" and is co-director of the Clinical Program at the Berkman Center for Internet & Society at the law school. Mr. Cunard is an active participant in community activities and the arts. He is Chairman of the Board of Trustees of the Freer Gallery of Art/Arthur M. Sackler Gallery, Smithsonian Institution; serves as Secretary of and is on the Board of Directors of Friends of Khmer Culture; and is Counsel to the College Art Association. He is a past President of the Woolly Mammoth Theatre Company and a past director of both Rhizome.org and the Choral Arts Society of Washington. Mr. Cunard graduated summa cum laude in English and Political Science from the University of California at Los Angeles in 1977 and received a JD in 1980 from the Yale Law School, where he was an Editor of the Yale Law Journal. After graduation from law school, he served as Law Clerk to the Honorable Wm. Matthew Byrne, US District Court for the Central District of California.

John Dobbins

John Dobbins, University of Virginia, is a Classical Archaeologist whose primary research is the forum at Pompeii where he is the Director of the interdisciplinary Pompeii Forum Project (PFP). Numerous discoveries by the PFP are changing the scholarly understanding of the forum's evolution. Dobbins is interested in representing the three-dimensional history of this important urban center through computer models that document dynamic changes within the

urban ensemble and within individual buildings. Harrison (Nick) Eiteljorg, II Nick Eiteljorg is a classical archaeologist who has worked with CAD to record ancient structures and is now working on a stone-by-stone model of the Propylaea in Athens. He founded the Center for the Study of Architecture (http://csanet.org) to further the use of CAD in archaeology and architectural history.

Diane Favro

Diane Favro is a professor of Architecture and Urban Design at UCLA and former President of the Society of Architectural Historians. Her research work explores the perception and interpretation of urban spaces in antiquity, as well as the pedagogy of Architectural History. She is Director of the UCLA Experiential Technologies Center, which promotes experiential research using a variety of technologies including the real-time modeling of historical environments complete with lighting, sounds, and linked metadata.

Bernie Frischer

Bernard Frischer is the author of four books and many articles on virtual heritage and on the Classical world and its survival. He received his BA in Classics from Wesleyan University in 1971 and his PhD in Classics from the University of Heidelberg in 1975. He taught Classics at UCLA from 1976 to 2004. Since then he has been Professor of Art History and Classics at the University of Virginia, where he also serves as Director of the Institute for Advanced Technology in the Humanities. He has been a guest professor at the University of Pennsylvania (1993), the University of Bologna (1994), and held the post of Professor-in-Charge of the Intercollegiate Center for Classical Studies in Rome (2000-01). He is a member of Phi Beta Kappa, a Fellow of the Michigan Society of Fellows, a Fellow of the American Academy in Rome, and he has won research fellowships from the American Council of Learned Societies (1981, 1996), the Center for Advanced Study in the Visual Arts (1997), and the Loeb Classical Library Foundation (2003). From 1996 to 2003 he directed the excavations of Horace's Villa sponsored by the American Academy in Rome, and from 1996 to 2004 he was founding director of the UCLA Cultural Virtual Reality Laboratory. In 2005 he was given the Pioneer Award of the International Society for Virtual Systems and Multimedia.

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Diane Harley

Diane Harley is a senior researcher at the Center for Studies in Higher Education (CSHE), University of California, Berkeley (http://cshe.berkeley.edu/people/dharley). Her work focuses on the policy implications of integrating information and communication technologies into complex academic environments. Areas of investigation include the analysis of digital resource use in humanities and social science education, the economics of technology integration into large lecture courses, the policy implications of cross border e-learning, and faculty attitudes about new forms of scholarly communication. Prior to her work at UC Berkeley, Diane managed multimedia education projects with various universities, publishers, museums, and

software developers. She holds MA and PhD degrees in Anthropology from UC Berkeley.

Charles Henry
Charles Henry is currently Vice Provost and University Librarian at Rice University. He is in charge of the library, the digital library initiatives, data application centers, and academic information technology. Previously he was director if libraries at Vassar College and assistant director, Division of Humanities and History, at Columbia University. Dr. Henry has served on the Steering Committee for the Coalition for Networked Information, is past president of the National Initiative for a Networked Cultural Heritage, is on the Advisory Committee for the new International University-Bremen, and a member of the Steering Committee for the Digital Library Federation in Washington. He chairs the Committee on Computer Science and the Humanities, sponsored by the American Council of Learned Societies and the Computer Science Telecommunications Board of the National Academy of Engineering. In 2001, Henry accepted six year appointment to the Texas Online Authority, Henry received his PhD from Columbia University and has published widely in the field of technology and higher education.

James Hilton
As Vice President and Chief Information Officer, Dr. Hilton is charged with coordinating information technology-related activity across the Grounds, developing collaborations among UVa's academic and administrative units that advance the University's missions, and working with the University community and its leaders to define and implement a vision for the role of information technology at UVa. The Vice President and Chief Information Officer reports to the Executive Vice President and Chief Operating Officer. Dr. Hilton is also a Professor in the Department of Psychology. Prior to this appointment at UVa, Dr. Hilton was a member of the faculty at the University of Michigan in the Institute for Social Research and in the Psychology Department where he served as the Chair of Undergraduate Studies between 1991 and 2000. He is a three-time recipient of the LS&A Excellence in Education award, has been named an Arthur F. Thurnau Professor (1997-2006), and received the Class of 1923 Memorial Teaching Award. He has published extensively in the areas of person perception, stereotypes, and the psychology of suspicion. With Charles W. Perdue, he published "Mind Matters," a multimedia CD-ROM that combines text with interactive exercises and multimedia elements and places them in a navigational structure designed to nurture exploration. Dr. Hilton received a B. A. in Psychology from the University of Texas in 1981 and a PhD from the social psychology program at Princeton University in 1985. Michael Jensen Director of Publishing Technologies, National Academies Press Christopher Johanson UCLA ETC, Associate Director Penelope Kaiserlian Director, University Virginia Press, University of Virginia.

Karen Kingsley
Karen Kingsley is Co-Editor-in-Chief of the Buildings of the United States series of books, professor emerita at Tulane University's School of Architecture, and former Head of the Architectural Archive at Tulane. She is author of Buildings of Louisiana (Oxford University Press, 2003) and has contributed numerous

articles to both scholarly and public interest journals and books. She earned her PhD at the University of California, Berkeley.

Robert Kirkbride
Robert Kirkbride, PhD, is director of studio 'patafisico and a fulltime faculty member of Parsons The New School for Design, where he coordinates thesis year in the Product Design Department. An editorial board member of the Nexus Network Journal, Kirkbride has been a visiting scholar at the Canadian Centre for Architecture, architect-in-residence at the Bogliasco Foundation in Genoa, Italy, and his dissertation on architecture and memory received the Gutenberg-e Prize from the American Historical Association and will be published in conjunction with Columbia University Press. His investigations encompass architecture, ecological land planning, furniture, installations and scholarly research, and have been published and exhibited widely, including The New York Times, Vogue, House Beautiful, and the film XX/XY.

Jeff Klee
Jeff Klee is an architectural historian with the Colonial Williamsburg Foundation, where he is responsible for the management of digital technologies–in particular, CAD, imaging, database construction and, in time, 3D modeling–for architectural research. He has an undergraduate degree in Architecture from Yale and is completing his PhD in Art History from the University of Delaware.

Richard Lucier
Along with Deanna Marcum, Richard co-founded the Scholarly Communication Institute in 2002; he continues his involvement with SCI as a consultant to the University of Virginia. Since the mid-1980′s, Richard has led and been involved in many innovative projects in scholarly communication including the Online Mendelian Inheritance in Man and the Genome Database at The Johns Hopkins Medical Institutions and the Red Sage Online Journals system at the University of California, San Francisco. As the Founding University Librarian of the California Digital Library, he initiated eScholarship program for the University of California.

Deanna Marcum
Deanna Marcum became the Associate Librarian for Library Services with the Library of Congress in August of 2003. Prior to that, she served as director of Public Service and Collection Management at the Library of Congress from 1993-95. In 1995, she was appointed president of the Council on Library Resources and president of the Commission on Preservation and Access. She oversaw the merger of these two organizations into the Council on Library and Information Resources in 1997, and served as its president until July 2003. From 1989-92, she was dean of the School of Library and Information Science at The Catholic University of America and vice-president of the Council on Library Resources from 1981-89. Dr. Marcum is the author of several books and reports, and has written prolifically on a variety of subjects, as well as many articles on issues of concern to librarians and students of the information sciences. She holds a bachelor's in English from the University of Illinois and a

master's in Library Science from the University of Kentucky. In 1991, she was awarded a doctorate in American Studies from the University of Maryland.

Linda Matthews
Linda Matthews is vice provost and director of libraries at Emory University and participated with a team from Emory in SCI3. She holds a PhD in history from Duke University and a library degree from Emory University. Kelly Miller Kelly Miller is a Council on Library and Information Resources (CLIR) Postdoctoral Fellow at the University of Virginia Library. She holds a PhD in Slavic Languages and Literatures from the University of Michigan, and her research and teaching interests include Russian and Czech literature, visual art, and culture. She has translated Czech poetry and Russian art historical criticism, and she is an external contributor to the online research archive, "The Russian Visual Arts Project" (http://www.hrionline.ac.uk/rva/), a collaboration between The British Library and the Universities of Exeter and Sheffield. She is currently preparing a paper on collaborative models for digital scholarship for the annual meeting of the American Association for the Advancement of Slavic Studies (AAASS).

David Millman
David Millman is the Director of Systems Integration in the Columbia University Information Technology organization. He is responsible for University-wide technology planning and operations for identity management, learning management and content management services, as well as several digital library projects at the Electronic Publishing Initiative at Columbia (EPIC) in the University Libraries. David has developed and managed Internet-based services since the late 1980′s, including public information systems, reference book databases, art museum collections, and electronic scholarly publications. A software developer since 1974, he has taught computer graphics and programming in higher education and in industry.

Fraser Neiman
Fraser Neiman (PhD Yale, 1990) is director of archaeology at Monticello and lecturer in the Departments of Anthropology and Architectural History at the University of Virginia, where he teaches courses in historical archaeology, archaeological theory, and quantitative methods (www.people.virginia.edu/~fn9r). He is also director of the Digital Archaeological Archive of Comparative Slavery (www.daacs.org), which is based at Monticello and funded by the Mellon Foundation, NEH, and the Thomas Jefferson Foundation. DAACS is an experiment in the use of internet technologies to promote comparative, quantitative, and synthetic study of archaeological data from sites occupied by enslaved Africans and their descendants in the Chesapeake, Carolinas, and Jamaica. Dietrich Neumann Dietrich Neumann is a professor for the history of Modern Architecture at Brown University in Providence, Rhode Island, U.S.A. He was trained as an architect in Munich, Germany and in London at the Architectural Association and received his PhD in architectural history at the University of Munich. Among his publications are books about the history of German skyscrapers, film set design ("Film Architecture"), and architectural illumination ("Architecture of the Night") and essays on historic building technologies, architectural education and individual

architects such as Mies van der Rohe and Richard Neutra. He has curated a number of major travelling exhibitions and has won teaching awards at Brown in 1993, '94, '99 and '06. In close collaboration with Brown's Scholarly Technology Group and thanks to a major grant from the university, he has developed new ways of teaching architectural history with the frequent use of panoramic QTVR photography and film. He currently serves as vice president of the Society of Architectural Historians.

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C. Ford Peatross is curator of the Architecture, Design and Engineering Collections in the Prints and Photographs Division of the Library of Congress. He has been instrumental in the expansion and dissemination of the Library's collections, in particular through its website; in establishing its Center for Architecture, Design and Engineering; and in the conception and development of the Norton/Library of Congress Visual Sourcebooks in Architecture, Design and Engineering series and the Library's exhibitions on the United States Capitol, Frank Lloyd Wright, and Charles and Ray Eames. He has lectured widely, and served as an adjunct professor at Union College and as a consultant to the Vitra Design Museum and Universal Studios. His publications include William Nichols, Architect (1979); Historic America: Buildings, Structures, Sites (1983); and Capital Drawings, Architectural Designs for Washington, D.C., from the Library of Congress (2005).

Lisa Reilly
Lisa Reilly is a faculty member in the Department of Architectural History and the joint graduate program in Art and Architectural History at the University of Virginia. She is also a fellow at the Institute for Advanced Technology in the Humanities at the University Virginia where she is investigating the design process for late medieval architecture in England. She has published principally on Norman architecture in England. From 1999-2002 she held the Horace Goldsmith/NEH distinguished teaching chair at UVa.

Margo Reveil
Margo Reveil is a Director of IT in the Office of Information Technology. Her primary focus is the integration and use of technology to advance the research mission in humanities, social sciences, architecture, and the arts. Margo is also a licensed architect in the State of California and has successfully combined her knowledge of architecture and IT to design and develop two immersive virtual reality theaters that support the development and presentation of scientific visualizations and historical architectural models. This seemingly diverse but effective skill set also allows her to use project and process management skills across multiple scales and project types – from websites and databases to complex technology rooms and buildings – such as her latest endeavor in managing the technology integration for the new California Nanosystems Institute at UCLA. In her thirteen-year career at UCLA she has successfully leveraged and applied these talents as a multimedia and web

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Will Rourke
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Terry Ryan
As the Associate University Librarian for the UCLA Electronic Library, Terry Ryan serves as the Chief Information Officer for the Library, with direct oversight of the UCLA Digital Library Program and Library Information Technology. Throughout her 35-year career in libraries, she has worked to expand the application of technology to both the stewardship and service roles of libraries. In recent years, the UCLA Digital Library has offered a suite of repository options to faculty and partnered with campus entities such as the Center for Digital Humanities to experiment with new forms of digital scholarship.

Pauline Saliga
Pauline Saliga became Director of the Society of Architectural Historians in 1995, just as the Society was preparing to move its national headquarters from Philadelphia to the historic Charnley-Persky House in Chicago. Ms. Saliga, who holds a Master's degree in art history and museum administration from the University of Michigan, was Associate Curator of Architecture at the Art Institute of Chicago from 1981 to 1995. While at the Art Institute, Ms. Saliga organized numerous exhibitions and catalogs focusing on 19th and 20th century architecture in America and Europe, including Fragments of Chicago's Past; Building in a New Spain: Contemporary Spanish Architecture; and Design for the Continuous Present: The Architecture of Bruce Goff, 1904-1982. Ms. Saliga's other publications include The Sky's the Limit: A Century of Chicago Skyscrapers and many publications she has overseen at the Society of Architectural Historians.

Mark Saunders
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Abby Smith is a historian and consulting analyst focusing on the creation, preservation, and use of the cultural record in a variety of media. In her previous position at the Council on Library and Information Resources, she collaborated with UVa on the Scholarly Communication Institute. She is

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MacKenzie Smith

MacKenzie Smith is the Associate Director for Technology at the MIT Libraries, where she oversees the Libraries' use of technology and its digital library research program. She is currently acting as the project director at MIT for DSpace, MIT's collaboration with Hewlett-Packard Labs to develop an open source digital repository for scholarly research material in digital formats. She was formerly the Digital Library Program Manager in the Harvard University Library's Office for Information Systems where she managed the design and implementation of the Library Digital Initiative there, and she has also held positions in the library IT departments at Harvard and the University of Chicago. Her research interests are in applied technology for libraries and academia, and digital libraries and archives in particular.

Lisa M. Snyder

Lisa M. Snyder is a senior member of the Urban Simulation Team at UCLA, the associate director for outreach and operations for the UCLA Experiential Technologies Center, and editor of the membership publication of the Los Angeles Conservancy, the largest local historic preservation organization in the country. Her research is focused on the educational use of interactive computer environments. Through the UST, she developed the real-time simulation of the Herodian Temple Mount now installed at the Davidson Center in Jerusalem and is currently working on a computer reconstruction of the World's Columbian Exposition of 1893. Snyder received her Master of Architectural History from UVa (Richard Guy Wilson, advisor), and her PhD in Architecture from the University of California, Los Angeles studying the design and use of experiential technology for the teaching of architectural history (Diane Favro, advisor).

Thorny Staples

Thornton Staples is currently the Director of Digital Library Research and Development at the University of Virginia Library where he is designing and building a digital library infrastructure. He is also the co-director for the Fedora Project. Previous positions include: Chief, Office of Information Technology at the National Museum of American Art, Smithsonian Institution; Project Director at the Institute for Advanced Technology in the Humanities, University of Virginia; and Special Projects Coordinator, Academic Computing at the University of Virginia. He has a degree in Systems Engineering from the University of Virginia. He is also a sculptor, with his works represented in 25 private collections.

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Diane Parr Walker
Diane Walker is the Deputy University Librarian at the University of Virginia. She came to UVa as Music Librarian in 1984, and has also served as Coordinator for the Education, Fine Arts, and Music Libraries, and as Associate University Librarian for User Services and Collections. Walker holds masters degrees in musicology from the University of Iowa and in library and information science from the University of Illinois. Before arriving at UVa, she held positions in the music libraries at the University of Illinois and the State University of New York at Buffalo. She is a past President of the Music Library Association and has also served as a member-at-large on the board of directors and as Treasurer of the Association.

Donald J. Waters
Donald J. Waters is the Program Officer for Scholarly Communications at The Andrew W. Mellon Foundation. Waters graduated with a Bachelor's degree in American Studies from the University of Maryland, College Park in 1973. In 1982, he received his PhD in Anthropology from Yale University. Before joining the Foundation in 1999, he served as the first Director of the Digital Library Federation (1997-1999), as Associate University Librarian at Yale University (1993-1997), and in a variety of other positions at the Computer Center, the School of Management, and the University Library at Yale. He is a fellow of the American Association for the Advancement of Science, and serves on the Steering Committee of the Coalition for Networked Information, the National Digital Strategy Advisory Board of the Library of Congress, and the Section 108 Study Group.

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Willeke Wendrich received her PhD from Leiden University in the Netherlands in 1999. A member of the faculty of the Department of Near Eastern Languages and Cultures and the Cotsen Institute of Archaeology at the University of California in Los Angeles since 2000, Wendrich is co-director of a large survey and excavation project in the Fayum (Egypt) and the editor-in-chief of the UCLA Encyclopedia of Egyptology (UEE), an online publication that aspires to become the standard reference work in the field. In addition she is the Faculty Director

of the UCLA Digital Humanities Incubator Group (UDHIG), a consortium of faculty who integrate research, education and information technology.

Madelyn Wessel
Madelyn Wessel is Special Advisor to the University Librarian, focusing on a broad range of library system legal issues including intellectual property, copyright, licensing, and special concerns arising in the area of digital scholarship. Her most recent presentation, "Copyright in a Digital Age," was to the Visual Resources Association Annual Summer Education Institute at Duke University. Ms. Wessel as an adjunct professor at the Curry Graduate School of Education and also taught a seminar in constitutional practice at the University of Virginia School of Law. She is a member of the bars of Virginia, Massachusetts, New Hampshire, and Oregon. Ms. Wessel served as Deputy and later Chief Deputy City Attorney for Portland, Oregon from1989-2001, practicing in a wide range of areas including constitutional, employment, civil rights and government relations. Prior to her position in Portland, Ms. Wessel served as an Assistant Attorney General and Chief of the Opinions Division, Massachusetts Department of Justice. Ms. Wessel holds a BA from Swarthmore College and a JD from Boston University.

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Karin Wittenborg has been University Librarian for UVa since 1993. She has established the first development program for the library, and has recently completed a successful library campaign, raising $37 million. Prior to coming to UVa, Wittenborg held professional positions at UCLA, Stanford, and the State University of New York. In 1981-82 she was a management intern in the MIT libraries. She serves on the Advisory Council for Stanford's Academic Computing and Libraries, Brown University's Committee on Information Resources, and on the Executive Committee of the Digital Library Federation. She has consulted for Rice, Wesleyan, University of Miami, and Florida International University. She is a frequent speaker at conferences. She received a BA from Brown and an MLS from SUNY-Buffalo.

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SCHOLARLY COMMUNICATION INSTITUTE 5:
VISUAL STUDIES

University of Virginia
July 8-10, 2007

Visual Studies: Making Visible the Invisible

INTRODUCTION

With funding from The Andrew W. Mellon Foundation, the Scholarly Communication Institute (SCI) began in 2003. SCI convenes each summer to provide an opportunity for scholars and leaders in scholarly disciplines and societies, academic libraries, advanced information technologies, and higher education administration to design, test, and implement strategies to advance scholarship and its dissemination in the context of the ongoing digital revolution.

Institutes 1-4 focused on the promotion of digital scholarship and its supporting infrastructure in digital humanities (SCI 1 and 3) and within selected academic disciplines (practical ethics in SCI 2 and architectural history in SCI 4). In 2007, Institute organizers took a broad look at visual studies, a set of image-based methodologies, resources, and technologies that present special opportunities and challenges in the digital world.

Participants explored the impact and implications of visual media and technologies on contemporary scholarship, covering the full range of activities that comprise scholarly communication: research and discovery; analysis; presentation; dissemination; and persistent access. What new questions does visual scholarship allow us to ask and investigate? How can libraries, publishers, universities, and funding agencies support and advance these new research agendas? They also explored the role of visual studies in building out the cyberinfrastructure for humanities scholarship, giving particular attention to national centers of excellence "that support collaborative work with specialized methods." [1] How might such centers catalyze the production of visual scholarship, and how should they be configured?

This report summarizes the Institute's discussions, with special focus on three key challenges vital to advancing visual studies: 1) the nature of representation, 2) infrastructure, and 3) partnerships and communication. It also proposes a model for the development of national centers of excellence based on the specific needs of scholars using visual sources and methods. We begin with a look at why the development of visual studies is so important at this juncture to humanities

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[1] The development of these national centers of excellence is a key recommendation in the recent ACLS report on cyberinfrastructure. See recommendation 6: "Establish national centers to support scholarship that contributes to and exploits cyberinfrastructure." *Our Cultural Commonwealth: the Report of the American Council of Learned Societies Commission on Cyberinfrastructure for the Humanities and Social Sciences,* 2006. p. 35.

scholarship; and we examine the three approaches used by participants to explore visual studies—that of theory, of evidence-based scholarship, and of visual arts.

I. WHY VISUAL STUDIES?

Visual media—motion pictures, photography, video, 3-D imagery, simulations, gaming, and new media artworks—are having profound effects on scholarship. Images have been disadvantaged until recently because of print-on-paper technologies: text has been easier and cheaper to publish. But in the digital realm, images are omnipresent online. They are serving both as the subject of research and as powerful armature for all kinds of information and analysis. Moreover, images and visualization technologies constitute a significant social force, one that scholarship can make a subject of research and as well as harness for its own ends. While the use of publicly networked image data bases, software platforms, and social sites may not be widespread yet within the academy, the reach of such technologies has created a momentous social phenomenon that captures the attention of the general population—including students—and will inevitably play an increasing role within the academy.

How significant are visual media? It is estimated that the amount of data in the digital universe is about 161 exabytes (161 billion gigabytes). The majority of these data are images, captured by over 1 billion devices world-wide (cameras, phones, scanners, satellites, and surveillance devices). As of early 2007, Google Earth reported ¼ billion downloads of its software; Flickr had ½ billion images online; and YouTube had 100 million video streams a day. By 2010, according to one estimate, there will be 988 exabytes of data in the digital universe—¼ original, ¾ replicated—and of that, 70 percent will be user-generated. Again, the majority of these data will be images.[2] How can scholars help shape these applications and social behaviors in ways that are advantageous to scholarship and learning? Toward what ends do they wish to use these new resources and technologies?

II. THREE PERSPECTIVES ON VISUAL STUDIES

To answer these questions, SCI convened leading scholars and practitioners in visual studies, the arts, and academic administration. (For a complete list of participants, go to: http://www.lib.virginia.edu/sci/archive/archive07_participants.php.) The group included:
- senior and emerging scholars and digital artists intensively using images in a broad mix of fields (art, history, cartography, media studies, archaeology, classics, and computer science)
- specialists in scholarly communication, digital librarianship, publishing, data bases, technologies, and copyright law
- funders from private foundations with an interest in visual studies.

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[2] On Google Earth, see *Wired*, July 2007, p. 258; and for estimates of the size of the digital universe, see "The Expanding Digital Universe, a Forecast of Worldwide Information Growth Through 2010" (ICD, March 2007).

Prior to the meeting, we asked the invited scholars and artists to identify their intellectual interests in and aspirations for visual studies; to take stock of the visual resources, tools, and applications that they are currently using; and to describe what additional resources they wish they had. At the Institute, they demonstrated ways in which they are using these tools and methods to probe new questions. (To view sample presentations, go to: http://www.lib.virginia.edu/sci/archive/SCI-5-Sample-Presentations.htm.) The resulting overview of visual scholarship, while by no means comprehensive, reveals that even with the diversity of the disciplines in which humanists work, there are striking alignments of the technologies they rely on, concerns about the present academic environment for the humanities, and hopes and ambitions for the future of visual studies. (To view the mapping of the survey answers, go to: http://www.lib.virginia.edu/sci/archive/documents/Mind-Map.pdf.) Participants identified the ultimate goal of their engagement with visual resources is "to make visible the invisible," though they do so with three distinct approaches—that of theory, of evidence-based scholarship, and of the visual arts.

Theoretical scholarship: Theorists described their uses of evidence and media as complicating existing cultural understandings and perceptions. They do this both through critical analysis and multimedia presentation. They work to uncover and make visible those things that are either deliberately veiled by power structures and/or inadvertently hidden by the nature of computer code (through what one participant identified as the "sourcery" of code). Theory is among the more robust tools they use to excavate and expose what lies beneath the surface of what we, embedded as we are in our own culture, see and apprehend. They emphasized that apparent distinctions between theory and practice, as well as distinctions between intellectual and practical challenges, are misleading, and expressed fascination with the various ways that the digital is particularly adept at erasing these distinctions. (See examples from Tara McPherson and others at *Vectors* http://www.vectorsjournal.org/; and Brian Goldfarb at *Global Tourette* http://globaltourette.net/.)

Evidence-based scholarship: In such fields as history, classics, and archaeology, which hinge on the gathering and examination of historical evidence, practitioners rely on existing infrastructure and resources to do their work. At the same time, they contribute to the infrastructure and particularly to shared information resources as they uncover new evidence or create new tools for analysis and presentation. Scholars use evidence in order to develop interpretations of past cultural events and phenomena. In so doing, they generate data (often through observing, measuring, and close reading); they vet and normalize these data; analyze the data; and they propose interpretations based on the data. With new technologies, they are devising ways to use visualized interpretations (simulations and re-creations) that allow the assumptions that underlie their intellectual propositions to be visible. (See examples from Bernard Frischer (Director, Institute for Advanced Technology in the Humanities (IATH)); Peter Bol (Director, Center for Geographic Analysis); Willeke Wendrich (Director, UCLA Digital Humanities Initiative Group and faculty advisor for UCLA Center for Digital Humanities); and David Rumsey (www.davidrumsey.com).

Visual arts: Visual artists at SCI reported their creative process thus: they take found data (as opposed to generating new data); they process it artistically; and they display it in ways that make visible what is normally invisible. As one participant said, as creative artists "We react to our culture and we react to our medium." In one case, the

artist takes real-time data (such as circulation statistics in a library), processes it, and presents it back in a way that allows people to view their own behaviors and literally to behold change over time. In another case, the artist takes "cultured forms" such as games and data visualizations and, through processing these to exaggerate their forms, makes visible patterns and processes inherent in both the code and people's reactions to them. (See examples from George Legrady (http://www.georgelegrady.com/; and Sheldon Brown (http://www.sheldon-brown.net/).

III. THREE CHALLENGES IN SCHOLARLY COMMUNICATION AND VISUAL STUDIES

While scholars and artists agreed on one critical goal of visual studies, "to make visible the invisible," what that means in terms of theory, evidence-based scholarship, and visual arts only became clear as discussions proceeded to probe three areas identified as particularly challenging and vital in scholarly communication and visual studies. These areas are:
1) nature and problematics of representation
2) communication and partnerships
3) infrastructure.

1. *THE NATURE AND PROBLEMATICS OF VISUAL REPRESENTATION*

Scholars identified certain affordances of digital communication with special relevance for visual studies and data visualization in the humanities:
- searching
- synthesizing, remixing, and comparing
- toggling, zooming, moving between micro and macro and across time and space
- iterating, which privileges process over product
- slicing data into layers and exposing them
- interactivity, immediacy, and transparency, versus the reflexive, contemplative, distancing mode inherited from the print tradition
- developing new collaborations among people with complementary skill sets
- blurring of theory and practice
- changing the transmission of knowledge from passive to active modes
- working in multiple platforms, and broadcasting to different audiences, from low-fidelity to high-fidelity, low-end to high-end.

However, these affordances in turn create a formidable array of problems. These must be addressed in order to understand the nature of representation and to use visual resources with the rigor that scholarship demands:
- impossibility of knowing who ones audience is—both professional and popular
- preventing misuses of data (of archaeological sites, protected cultural practices, personal data)
- impact of globalization and its effect on the reception of images
- counteracting the decontextualization of images
- understanding the blurring of theory and practice

- grappling with the "seduction of the visual"
- compensating for the lack of interoperable platforms for 3-D, 2-D, and GIS
- delivering high fidelity over low bandwidth
- problems in gaining, acquiring, digitizing, and normalizing historical data
- difficulty in revealing layers of data
- commercial nature of content and applications
- implications of technical dependencies for persistence (of content, tools, software)
- problems in citation and reuse
- threats from media and software obsolescence.

We have yet to understand how the visual field and our perceptions of it operate in the creation of knowledge. Digital visual technologies challenge our text-based ideas of literacy: visual literacy is more than simply acquiring a set of skills for "reading" an image. We have the technical capacity to show as well as tell, to explain as well as present the image (and sound and affect). But how do we do this in the context of critical thinking?

Online distribution channels tend to be broad and extend well beyond the narrow bands of print communication. Scholars cannot be certain who their online audiences are. Nor can they control how their message is received, so they must be especially sensitive to the global reach of images. The cultural assumptions that underlie all representation are determinative forces in reception and reading of the visual field. We do not yet have adequate understandings of those assumptions, let alone the ability to make those assumptions transparent. Scholars are particularly concerned about the power of search on the Web. They relish the chance to advance their work in unprecedented ways with new capacities for finding and analyzing data, deploying them in virtual recreations, and disseminating them to colleagues. But they are also wary. Data that can shed light on patterns of peoples' behavior or geographical locations of archaeological sites can be easily misused, either innocently or maliciously. It is imperative to devise ways that scholars can continue to share data in appropriate forms (e. g., anonymized when personal) but also ensure that information about archaeological sites, demography, and personal health be protected from abuse.

And while there is a strong desire for scholars to take advantage of existing collaborative environments (such as Facebook and MySpace) for scholarly work, they are cautious about developing dependencies upon commercial entities, no matter how benign they appear to be and how useful their products. The basic incompatibility between scholars' long-term time horizons and commerce's short-term horizons introduces undesirable risk into the research environment.

Perhaps the greatest hazard of all for visual studies is the credulity of the eye and the power of images to convince through verisimilitude. Scholars are just as likely to be seduced by the power of images as is the general population. Those who develop visualizations, simulations, and historical recreations must take special care to make all of their assumptions visible to the naked eye. As one scholar said, the modes of representation grow inevitably out of the analysis of data. But the representations themselves, even if they are simply hypotheses, can be so powerful that they engender

belief and mask the assumptions used in the analysis. This led some to conclude that technical literacy must be cultivated at the same time as cultural literacy.

The fact that new information technologies produce changes in the nature of representation is not new. Nor is the revolutionary impact of these new technologies on scholarship. The present digital revolution in many ways recalls the print revolution initiated in the 15th century. The invention of movable type occurred at a time when readers and writers shared a culture of literacy that transmitted knowledge through the manuscript, and notions of what constituted a text, a codex, an authoritative source, and reading itself were manuscript-based. The transition to print-based culture took centuries to evolve from that, and in the meantime, there was no fixed notion of spelling and grammar, of text and book, or of the role of the reader and the role of the author. In similar ways, scholars noted, they are experiencing a change in orientation both as reader and as author in the digital realm. For example, they are experiencing digital visuality as very process-oriented, less outcomes-oriented than print-based communication. Several insisted the medium "resists" our habits of fixing information into final, "authoritative" or "archival" forms. By the same token, scholars indicated that it is they themselves who are resisting the normalization and fixation of what they analyze and present, sensing that, at this juncture, unrestricted exploration is needed. Calls by some participants for standardization and normalization (of tools, of processes, of data management, of presentation) for the sake of building a stable infrastructure were dismissed by others as wrong-headed, premature, or simply uninteresting. Similar conflicts between stasis and change, between closed, stable forms and open, unstable forms of representation made themselves felt in the discussion of infrastructure.

2. *INFRASTRUCTURE*

Participants marveled that the digital transformation in scholarship promised in the early 90s has not happened. Some suggested that the root cause of this is the lack of appropriate support, especially in terms of infrastructure. What kind of infrastructure is needed to aid that transformation? Many institutions have developed infrastructures that can support computer-assisted textual studies and digitization of analog resources. But what visual studies needs to really flourish is:
   • greater organizational capacity, including technical interoperability and greatly increased storage and bandwidth
   • skills acquisitions and transfer
   • preservation and sustainability
   • increased funding
   • administrative support and program management.

People noted that the provision of technology resources varies greatly from one campus to another. But across virtually all campuses, there is a lamentable lack of technical expertise, working environments and laboratories conducive to collaboration, processes in place for preservation of content and sustainability of projects, and funding and administrative support on the scale that is necessary for sustained development of digital humanities. Because visual studies usually constitutes a mix of people from different fields, there need to be well equipped, convenient and neutrally

located places for people to work together. Interdisciplinary centers are uniquely qualified to be such places.

Interdisciplinarity and collaboration, however, come at a price. The interoperability that collaboration demands requires a large degree of standardization of tools, applications, and data management practices, standardization that practitioners often find undermines expressivity and scholarly rigor. For example, a presentation tool navigates through images in ways that are inherently interpretive, because it allows some vantage points (from above, from below), but not all. The constant reuse of such a tool without customization will perpetuate the cultural conventions that are embedded in it. Such conventions need to be revealed and unpacked, and here scholars argued for theory as an essential tool for visual studies. Theory is itself a toolbox full of the most flexible instruments of analysis and criticism. In many ways, theories are nimble, easy to develop, share, modify, and discard in order to provide maximum lability for analysis and interpretation. Expressivity and transparency are the highest priorities. While extensibility is important and desirable from the perspectives of interoperability and preservation, it should not be purchased at the expense of rigor and flexibility.

Humanities scholars place a high value on preservation, both of content and of projects. In particular, the projects that involve visualization technologies, GIS, and database development are deemed to be most in need of committed and reliable stewardship. These projects are time-consuming and expensive; the content and the outcomes should be preserved. Scholars noted that the dissemination of works-in-progress is also important, so that others do not inadvertently or needlessly duplicate what they are doing. But in contrast to evidence-based investigators, digital artists, while also placing value on preservation, do not define it solely, or even chiefly, in terms of content. Rather, they emphasize the processes, intentions, experience, and materials that come together in a project. To preserve these means to pass them on to others. There is also concern in general that the primary sources vital to humanistic study, which are usually created outside the academy and are often privately held and/or copyrighted, will not be available to future generations to study unless steps are taken now by higher education to collect and preserve them.

Participants proposed solving the people-with-skills shortage by providing humanists a stronger computer science background. This would eliminate the need for the usual kinds of collaborations, ones that too often see the humanities aspect of a project subordinated to the technical and scientific. The development of bachelors and masters degrees in digital humanities (comprising a core humanities field and computer science), if broadly implemented on many campuses, would produce a cadre of such digital humanists within 5-10 years. After all, as one scholar noted, "We represent the construction companies: we build components and resources that are critical for digital scholarship." The relationship between building the infrastructure and using it is cannot be separated. Nor can design and construction of the infrastructure be delegated to technologists.

With respect to funding, there are advantages and disadvantages to the European model (comparable to the NIH model in biomedical sciences) in which a powerful central funding organization provides robust funding. Such an organization is theoretically in a position to solve sustainability and quality problems by imposing

standards, digital management policies, and mandatory preservation on the grantees. It was noted that this approach was taken in biology and the outcomes have been very successful, resulting in the development of a related specialty: bioinformatics. But centralized governmental funding is not the norm in America. Nor are there comparable heavyweight funders in the humanities. The bottom-up models, usually subscription-based (such as the Performance Studies International) offer fewer funds, but in theory are more responsive to the needs of the grantees. On the other hand, collaboration seldom happens spontaneously, especially across schools and disciplines that work according to different funding and reward structures. In order for collaborations to coalesce and become effective, someone with money and authority needs to be able to command people and resources, or nothing much happens. Indeed, the modeling and practice of collaboration itself, as a working method that can bridge disciplinary boundaries, deserves to be funded. Whatever administration needs to be in place to effect this model, it must be light weight. As soon as there is any permanent administrative structure in place, bureaucracies take hold and core project goals are easily compromised. In all cases, it pays to guard against technical determinism. It is the idea and the project that should precede the technology and the administration of the project.

Money and other resources could go a lot further if there were some alignment of interests that brought together people working on similar problems. If, for example, there were regional centers clustering around specific technologies, that would allow funding to be centralized, reduce competition for the funding pie, and bring people exploring similar technological problems together. Moreover, there is always the hope that if technical solutions could be fields-wide, there might be a set of overall solutions for humanists that results in a convergence of disciplines and domains. But convergence is dependent upon robust partnerships built upon shared ambitions and facilitated by mutually intelligible communication.

3. *PARTNERSHIPS AND COMMUNICATION*

The cyberinfrastructure that will best serve to catalyze the development of visual studies will be built and used by researchers coming from a variety of disciplines. Humanists need to develop deep collaborations with designers, programmers, and engineers, as well as scholars in other disciplines. Humanists must also reach well beyond the academy to the commercial sector and to the general public. Factors for success will depend on:
- partnerships within the academy
- partnerships outside the academy
- blending theory and practice, intellectual and practical issues
- adapting traditions of scholarly communication

Collaboration across disciplines requires understanding and acknowledging the different outcomes that various members of the collaboration aspire to. The humanities and scientific professions have different reward structures, different traditions of scholarly communication and publication, and distinctly different traditions of sharing data. Should these differences be harmonized, transcended, or ignored?

Many participants expressed anxiety that partnerships with science inevitably end up marginalizing the interests of humanists. They suggested that rather than work in collaboration with engineers and programmers, humanists need to "grow their own" and ensure that graduate students develop technical literacy as well as cultural literacy. They are encouraged by what they see in the classroom: undergraduates and graduate students do not perceive a conflict between cultural and technological literacies. Academic programs that emphasize technological practice with a critical theory basis are crucial. Most students arrive at school without an analytical framework in which to understand technical practice, but they have been avid consumers—and in some cases producers—of technology.

Partnerships beyond the academy will be increasingly important to cultivate and manage, if only to keep pace with and benefit from the leading edge of technological development, together with the capitalization that makes such innovation possible. What are the risks in doing so? The most salient is a potential conflict between commercial and scholarly values. Given the power of commerce and money in our society, such conflicts could well work against scholarly values, at least in a significant number of cases. Reliance on commercial products should be accompanied by partnerships with commercial entities to ensure persistence of important content and products over time. Higher education and the public sector (such as libraries, museums, and archives) need to be active in developing such partnerships for the sake of reliability, authenticity, and persistence.

Acknowledging the importance of research, learning, and innovation that happens off campus, the group nonetheless argued for the importance of schools facilitating particular types of learning. While the scholarly culture and academic institutions do not incubate innovation nearly as quickly as commercial companies do, they do provide intellectual freedom. Reason-based inquiry in the context of such intellectual freedom needs to be maintained. While vernacular technologies (e.g., Facebook) can be used for research and teaching, it is important that they be used with the rigor and methodological accountability demanded by critical analysis.

The use of consumer-based technologies in the service of academic goals will have profound destabilizing effects on scholarly communication. Current senior faculty come from a world shaped by textual studies with a strong definition of what publishing is. What will the upcoming generation grow up knowing and preferring? Current trends suggest that most students will have familiarity with Google Earth, Facebook and MySpace, Flickr, and blogs, to name but a few common applications. How do we develop modes of scholarly communication appropriate for visual studies that build on preferences and habits of incoming graduate students? We do so, participants argued, through deep partnerships with programmers, designers, and others who are central to the production scholarship. Such collaborative productions will end up redefining authorship, and single-authored works will become increasingly rare. Control over authorship and rights to the work product will be shared; and at least in the beginning of this transition to new forms of publishing, negotiations of rights, credit, and ownership should be addressed at the beginning of a project. Such transparency will go a long way towards engendering the environment of trust necessary for productive collaborations.

As the spheres of scholarship and consumer markets are blurring, scholars see increasing opportunity to extend the reach of humanities to the public. There are a lot of users that exist in the space between scholarship and the consumer market—including undergraduates, lifelong learners, and citizens seeking to develop informed opinions. Is it possible to embed the high values of critical thinking and reason-based inquiry in public discourse that reaches them? Is it also possible to create bounded communities of discourse within the public sphere? And looking within the academic community at peer-to-peer communication, how can virtual technologies extend, complement, and deepen real-time, in-person communication? How many channels and how many modes of packaging of information do scholars need?

These sets of questions, as well as those posed by participants in discussing the nature of representation and their needs for infrastructure, are all topics in scholarly communication that are ideally addressed through academic research centers. There people from many different domains can come together to work through intellectual and practical problems in a collaborative spirit.

IV. NATIONAL CENTERS OF EXCELLENCE

The notion of national centers that brings special focus to the myriad questions clustering around the topics of visual studies, 2-D and 3-D data visualization and simulation, GIS capacities, and innovative models of scholarly communication really resonated with practitioners at the Institute. But what would such an ideal center look like? The topic was framed on the first day of the Institute by a participant asking "Why are there so many centers on campuses? Why do faculty form them, and what do they do there that they cannot do elsewhere and otherwise?"

Participants identified the following benefits that a center brings to intellectual pursuits:
- that is where the support staff and equipment are
- that is where the money is
- it is a zone of intellectual freedom, where one finds the ability to do things that cannot be done within existing political structures (i. e., departments, divisions, institutions)
- it encourages experimentation
- it allows for the sharing of expertise and experience
- it bridges culture gaps between disciplines and domains
- it allows scholars to gain exposure to other disciplines and develop creative collaborations
- it allows for project development (management of content and stewardship happen elsewhere)
- it allows for managing content and long-term stewardship (because they may not happen elsewhere)
- it allows for administrative and technical support of activities that fall outside of departmental lines

While there is consensus about a number of the benefits that attract scholars to centers, there was no consensus on how to organize and sustain centers so that they do not succumb to bureaucratic inertia. Permanence is needed:

- for a service model of center, one that provides support for infrastructure such as a supercomputer center with networks, equipment, key support staff
- for long-term projects that need ten plus years to develop and reach fruition, as well as requiring long-term stewardship of research outcomes
- for funding purposes, to attract permanent funding or endowment

Yet despite the clear advantages of permanence in terms of sustainability (of finance, technology, and content), many scholars urged that centers be conceived in terms of fixed, "not-to-exceed" periods of time. This would give centers the advantage of:

- being project-driven and focusing on the programmatic needs of scholars, not the institutional needs of the center
- providing flexibility in attracting experimental projects
- avoiding bureaucracy

Acknowledging that there is a proliferation of centers on campuses across the country, participants argued that there is still something missing from the landscape: a trans-institutional center for visual studies that maintains its focus on the intellectual and programmatic needs of scholars. They argued for one or more centers that would have the following characteristics:

- hybrid between virtual and physical: it has a physical administrative hub; the center itself is virtual and "touches" down in physical instantiations periodically
- national, with appeal for national funding
- anchored by a core leadership that works together for a short period of time (3-5 years), with thematics identified for that time frame
- leadership changes periodically and new thematics are chosen
- international participation
- mix of generations and diversity of participants
- melding of theory and practice
- focus on visual studies very broadly conceived
- project-driven, with no agenda of its own
- provide coordination, project management, funding, and technical support to scholars
- develop and sustain methods and solutions to problems, thus creating "institutional memory" to help move fields forward rapidly
- give special attention to scholars who are at institutions without infrastructure
- offer courses or workshops at different institutions (cf., TEI model)
- be virtual, because digital visual fields are changing so rapidly; it is important not to "lock in," but maintain the ability to respond rapidly to changes

When asked what next steps that SCI could take to help, they replied:

- work with a small group to plan, map, scope this center
- help with a planning grant
- help identify public and/or private funding resources
- help develop a sustainable funding model.

As the center gets underway, the first cadre of leaders needs to do some mapping of fields and technologies, of who is doing what, and what theories, practices, and thematics are good candidates for the first few years. The Council on Library and Information Resources (CLIR) is undertaking an extended survey of academic research centers, including those focused on the humanities. The final report, due out early next year, "will articulate the findings of the research and recommend the most promising models for the proposed national centers"[3] and thus may aid in mapping as the center take shape.

Digital artists, many of whom are affiliated with centers on their campuses, cited an additional function for centers. They said that centers play a critical preservation role. As artists, they place little value on preserving content for reuse by others. The scholarly model of "data sharing" doesn't work for them. In fact, in some cases this issue is tied so closely to their IP that the concept of preserving and sharing content as such is disquieting. They put a premium on keeping things *alive* versus making things static and fixed and thus *preserved*. In short, the goal of preservation is knowledge transfer, and that is precisely what a center can enable.

V. CONCLUSION AND NEXT STEPS

SCI 5 made visible the rapid maturation of digital scholarship in the humanities. For all participants in this Institute, digital scholarship is not an aspiration, but a fact. Issues that in previous Institutes have been framed as roadblocks—intellectual property and promotion and tenure matters—were seen as complicating factors that need to be resolved, but will not stand in the way of making progress. Because the participants are already deeply engaged in the practices of digital scholarship, the discussions focused on developing best practices and enabling the next generation of scholars to engage important new research agendas.

At SCI 5 we looked across a widely ranging portfolio of humanities disciplines through the lens of visual technologies, methodologies, and resources. This made vividly clear that the early stages of fundamental transformations in humanities scholarship are well underway. The scholars' interest in technology is primarily as an enabler of further scholarship. They see it as a vital constituent component of the cyberinfrastructure that is under construction, but far from the only or even the most significant. The time is ripe to address all the components of cyberinfrastructure for the humanities, ranging from the technology itself to institutional arrangements that might catalyze more scholarship (such as national centers of excellence), developing cultures of collaboration and nurturing communities of action, and cultivating leadership in humanities. National centers of excellence will be the focus of the next Scholarly Communication Institute (SCI 6).

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[3] http://www.clir.org/pubs/issues/issues57.html

**SCHOLARLY COMMUNICATION INSTITUTE 5:
VISUAL STUDIES**

July 8-10, 2007

*Visual Studies:
Making the Visible Invisible*

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SCHOLARLY COMMUNICATION INSTITUTE 6:
HUMANITIES RESEARCH CENTERS

University of Virginia
July 13-15, 2008

Introduction and Meeting Summary

With funding from The Andrew W. Mellon Foundation, the Scholarly Communication Institute (SCI) began in 2003 with the goal of providing an opportunity for scholars and leaders in scholarly disciplines and societies, academic librarians, information technologists, and higher education administrators to design, test, and implement strategies that advance the humanities through innovative information technologies. The Institute convenes each summer at the University of Virginia.

Institutes 1-4 focused on the promotion of digital scholarship and its supporting infrastructure in digital humanities (SCI 1 and 3); and in selected academic disciplines (Practical Ethics in SCI 2 and Architectural History in SCI 4). In 2007, SCI 5 took a broad look at visual studies, a set of image-based methodologies, resources, and technologies that present special opportunities and challenges in the digital world.[1]

In SCI 6, participants undertook an exploration of humanities research centers and their potential to advance technology-enabled scholarship. Centers afford a flexible organizational model that serves as home to interdisciplinary investigations and the development of new research agendas. They were called out as sites for innovation by the American Council of Learned Societies (ACLS) in its 2006 report, *Our Cultural Commonwealth: Cyberinfrastructure for the Humanities and Social Sciences*.[2]

SCI 6 was designed to determine what collaborative actions a group of humanities centers might undertake that would promote technology-enabled scholarly communication. Though we are particularly interested in how new technologies can advance scholarship, the goal of this meeting was to engage centers organized in a variety of models and with differing orientations towards technology. In this report we use the term "humanities research centers" to denote both those centers that were conceived with the express purpose of addressing issues of technology—often called digital humanities centers—as well as those more traditionally conceived, with no specific technology agenda. Digital humanities are academic pursuits "using information technology to

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[1] For more information on the Scholarly Communication Institute, see http://www.lib.virginia.edu/sci/.
[2] For the report and its background, see http://www.acls.org./programs/Default.aspx?id=644.

illuminate the human record, and bringing an understanding of the human record to bear on the development and use of information technology."[3]

A wide spectrum of research centers were represented at this institute: local, campus-based centers that serve all humanities and social science faculty; discipline-specific centers; a national center of excellence that formed around a rich collection of rare primary-source materials; a digital humanities center housed within an academic department; a digital humanities center that constitutes an academic department; a campus-based center that supports experimental work in digital humanities; and an international institute that relies on digital technologies to share multilingual resources and maintain an international network of collaborators. Also represented were several centers still in the development phase with explicit plans to focus on new technologies.[4]

The fourfold **goals of the meeting** were to:
- identify shared aspirations for the humanities, focusing on those particularly enabled and promoted by new information technologies;
- look at the current landscape of centers, identify complementary strengths among centers, and investigate areas of potential collaboration;
- develop a framework for collaborative action; and
- engender a conversation about common challenges and solutions that participants will continue among their peers.

To achieve these goals, SCI leadership assembled a group of distinguished scholars and academic professionals with complementary experience and perspectives on humanities research centers. Participants included:
- directors of humanities research centers;
- scholars whose research and teaching has been transformed by imaginative uses of new information technology and who are themselves practicing new forms of scholarship; and
- academic officers and administrators who play key roles in university infrastructures, together with funders who make this possible.

Shared goals and a framework for action

By the end of the meeting, participants had identified several concerns and challenges around which they could make common cause. A consensus emerged with respect to:
- the desire to integrate new information technologies fully into the mainstream of research and teaching
- the urgent need to agree on what constitutes a contribution to scholarship in the digital era (i. e., one no longer tethered to print and privileges the scholarly monograph above all else)

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[3] Schreibman, Susan, Siemens, Ray, and Unsworth, John, eds. *Blackwell's Companion to Digital Humanities* (Oxford: Blackwell, 2004) xxii.
[4] For a list of participants, see http://www.uvasci.org/current-institute/invited-participants/.

- a view of how centers may complement each other and constitute a whole greater than the sum of its parts ("the ecology of centers")
- what potential centers have to effect desirable changes

Participants identified a common framework for action, with concrete steps moving forward:
- to align centers with complementary strengths;
- to capitalize on special opportunities for traditional and digital humanities centers to collaborate on areas of common interest; and
- to develop and seek funding for a project or an initiative that could address one or more of the strategies identified.

There are existing networks of centers that do act to coordinate interests and actions, among them the Consortium for Humanities Centers and Institutes (CHCI), with over 150 allied institutions across the globe; and centerNet, an alliance recently forged among several dozen digital humanities centers.[5] Individuals from centers allied with one or the other consortia participated at SCI. These groups could be the framework through which centers could "work together and form alliances…to fill knowledge gaps and transfer expertise across campuses."

Next steps

SCI leadership will work with the leadership of the CHCI and centerNet to explore the development of a common agenda, the substance of which may include:
- methodological issues with respect to digitally-enabled research; and
- how to credential digital scholarship through an examination of what constitutes a contribution to scholarship in today's academy.

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[5] More information about CHCI and centerNet is available online:
http://www.chcinetwork.org/ and http://digitalhumanities.org/centernet/

What follows is a summary of the major points of discussion from SCI 6, much of it paraphrased or condensed from participants' contributions. Remarks in quotations are those of participants, made either during the institute or drawn from comments provided in writing prior to the meeting.

1. Why Research Centers?

The Institute is interested in new forms of scholarship and new ways of working together. While intentionally focused on new digital information technologies, our interest is not in the technology per se, but in how technology can support and advance scholarly communication. The attention to technology is based on our appreciation of the formative power that communication technologies have always played in the humanities, a power evidenced by the waves of intellectual ferment that followed the spread of movable type and the use of print-based communication as the foundation of humanities research, review, and publication. There is every reason to expect similarly significant changes to evolve from the default use of digital over analog communication—at present we see it overwhelmingly in the case of e-mails for correspondence, the use of search engines for search and retrieval of sources, the use of word processing for composition, and so forth. These new technologies are even enabling the long-delayed incorporation of image and sound technologies—which were much harder to gain access to and use when recorded and reproduced on analog formats—into research and teaching that date back to the 19th century.

It is natural to see research centers as part of an effective strategy for the adaptation to innovation. Research centers occupy a privileged position in the humanities, serving as sites for advancing new research agendas and enabling cross-disciplinary partnerships. In fact, they have evolved into key elements of academic infrastructure, providing working environments that uniquely foster experimentation. For decades they have attracted the best scholars, as well as sustained funding from administration and numerous extramural sources. Some have been able to build up significant capacities to support research and to create communities, often providing well-equipped spaces that conduce to a meeting of the minds. They have dedicated administrative and technical staff with whom scholars develop and maintain partnerships. At the same time, some scholars and center directors noted that a certain number of humanities centers proliferated, in a spirit of "me-tooism," to reward or retain faculty members. The point is that while centers offer a flexible institutional framework, what is important is not the fact of a center, but rather what the center enables people to do. This enabling function requires leadership, vision, and resources.

Acknowledging this mixed record of achievement, participants still agreed that centers serve well as an institutional framework to support models of entrepreneurship, a model that is particularly valued within a conservative academic culture that does not normally cultivate or even accommodate entrepreneurs. For that reason, among others, centers feature as a prominent organizational tool in a suite of recommendations offered by the ACLS Task Force on Cyberinfrastructure for the Humanities and Social Sciences.

Centers have several advantages over academic departments as places for experimentation and cross-fertilization. Departments are the locus of pedagogical administration and faculty governance, cannot move easily from one topical focus to another or serve well as an interdisciplinary clearinghouse of ideas. They don't offer symposia and workshops or seldom are funded to do so. Centers can and should be intellectually more aggressive than departments. In the past several decades, for example, centers have been home to lively work in theory, new methods, and a variety of topical subjects and intellectual trends that departments cannot afford to invest their scarce resources in.

While there was a natural tendency at the Institute to categorize centers, as a way of dealing with their primary features in shorthand—digital versus non-digital (analog?), local versus national, and so forth—such sorting is, of course, somewhat misleading. Unlike the sciences, which sees high value in innovation, the humanities have always prized the ability to nurture cultural continuities, to sustain long arguments (over centuries and millennia, preferably), and to puzzle out what is continuous and conserved within a community of discourse as well as what is innovative and novel.

One perspective on the role of centers in the humanities is that, while centers are "one of the more flexible and more adaptable forms of academic organization," they have nonetheless been "symptoms of deferral" rather than "agents of change," deferring, that is, the recomposition of disciplines and realignment of departments on campuses across the country. Unlike the case with sciences, where there have been fundamental reorganizations of departments tracking closely the reconfigurations of disciplines (zoology and botany, for example, have given way to molecular biology, systems biology, ecology, and so forth), humanities centers have been magnets that have drawn off the intellectual ferment of the past decades and left departments and often disciplines themselves largely untouched. Many of the best centers are notable for their aggressive intellectual agendas. In that sense, one could say that traditional humanities centers have been potent agents of homeostasis in the ecology of humanities, obviating the recomposition of disciplines. What one scholar characterized as "this inertia" has resulted in a certain professional disorientation: disciplines still hold sway in credentialing scholarship; departments remain sovereign with respect to hiring and promotion; and interdisciplinary scholarship—often the leading force of innovation—has little visibility in either domain.

There was strong consensus among participants that this homeostasis is not necessarily benign and in any event cannot hold in the face of new communication technologies. In the view of one center director, "Having become

aware of how they served as a symptom of a deferral for so long, [centers] are trying to imagine how they could become an agent of change." Deeper engagement with scholarly communication technologies holds the promise of deep intellectual transformation and the re-examination of the primitives of research, teaching, and what constitutes a contribution to scholarship. Indeed, this serves as an explicit intellectual agenda among some digital humanities centers.

The dozens of digital humanities centers that have sprung up in the past few decades are consciously seeking to be agents of change by responding not to changes within disciplines per se, but to the disruptions forced by new technologies upon all aspects of scholarly communication. In this view, digital humanities is more than an enhanced way of doing what has always been done. It is the site of an epistemological shift within the humanities. It explicitly and vigorously debates the very objects and goals of scholarship, as well as the methods of research and publishing. To engage deeply with digital technologies, it is necessary to forge extensive collaborations not only among scholars within a discipline, and not only among scholars from different disciplines, but also with information technology (IT) staff, librarians and archivists, and publishers. Digital humanities centers are organized precisely to support these collaborations.

But if, as one participant asked, digital humanities centers are busy planting seeds, can we expect these centers to cultivate some of these seedlings into stands of healthy trees? The move from experimentation to normalization is a key concern. So, too, is the equally demanding shift from first-stage digital activities—digitizing resources, creating metadata records and finding aids, training students and scholars in new applications—to second-stage activities—deep methodological investigations and associated tools development. As digital scholarship matures, second-stage digital humanities centers are encountering disquietingly pragmatic problems, such as recruitment and retention of staff. The professional staff of these centers should have technical expertise and be fluent in the intellectual discourses that animate the center. How are they to keep academically gifted young scholars within the academy if the academy does not offer them a home that fosters their gifts; this in the face of economic opportunities they have in commercial venues that do value and reward these very same talents? This gets to the fundamental problem of credentialing digital scholarship. And this returns us to the dilemma that departments continue to control hiring and promotion; and that disciplines continue to control peer review.

Thus SCI participants arrived at two corresponding challenges that suggested a common approach. For traditional humanities centers, the challenge is to move from being "symptoms of deferral" into "agents of change," continuing to be intellectually aggressive while grappling with the full implications of new media for the humanities departments and disciplines. And for digital humanities centers, it is how to achieve a desirable level of stability with respect to personnel, technical infrastructure, and funding, while remaining flexible and engaging with the broader humanities community. In addition, participants concurred that both types of centers share the common goal of mainstreaming

the intellectual achievements and new modes of communication, fostered in centers, that take advantage of new media, for the greater benefit of research and teaching. These conclusions suggested areas around which collaborations could be formed.

2. Key Trends, Common Aspirations

To understand what a productive path forward would be, participants shared perspectives on the significant trends that are shaping the landscape of the humanities. They agreed on a number of shared goals and acknowledged the challenges to moving ahead with a common action agenda. The five key areas of interest that emerged are:

- *new modes of working*, particularly the importance of collaboration across disciplines and professions;
- *methodological issues*, ranging from how to grapple with the scale of digital corpora in multiple media, the deployment of new quantitative methods of analysis alongside innovative qualitative approaches, and the multiple ways that research results can be codified, annotated, presented, and reviewed;
- *new modes of communication and publishing*, modes that expand the notion of scholarly communication beyond formal publication and move the humanities into public venues as never before; these new modes were greeted as positive and exciting, with distinct possibilities of energizing new publics; at the same time, consternation and some anxiety was expressed about credentialing and peer review;
- *organizational models* that are flexible and foster innovation; particularly, an understanding of the ecology of humanities research centers that would suggest natural complementarities among them; and
- *technical infrastructure* that will enable and sustain advanced scholarship, together with human-resource and funding needs.

Exploring these areas in detail created the groundwork for identifying shared aspirations and developing a framework for common action.

a. Collaborative research and new modes of working

There was ready agreement that collaborative research is necessary and desirable in the digital realm. At the same time, participants recognized that it is usually complicated and costly: it demands time and attention. It also has ethical implications for the academy and calls for a conscious effort to make explicit the hierarchies embedded in current modes of work. This mode was characterized by one participant as "monastic," as opposed to the "collective, collaborative" mode that is the default in the digital realm. As is clear from this metaphor, people are aware of the ethical implications of this manner of working, proposing as it does a novel set of relations between faculty and the many professionals and paraprofessionals in libraries, archives, museums, IT departments, and publishing houses who power the engines of scholarly

communication. "Real value is to be gained by pairing scholars with technologists, librarians, archivists, designers and publishers around specific research agendas, rather than thinking of these other intellectual partners as somehow ' service providers' to scholars." "The most successful projects are those in which there is a constant exchange of ideas and information, and where technical and curatorial specialists are closely involved in the research project."

Collaboration is made necessary by the sheer scale of available data, the novelty and complexity of hardware and software, and the breadth of skills and expertise that digital applications demand. These collaborations cross institutional boundaries, in part because the "threshold of skills needed to address complex questions becomes higher and higher," as one participant said, citing the incorporation of Geospatial Information Systems (GIS), data mining, and visualizations into fields such as history, archaeology, linguistics, musicology, cultural studies, and many more. How, for example, are we to collect and preserve performances? These challenges demand choices that are freighted with intellectual and aesthetic issues, in addition to being technically challenging and often expensive to normalize for academic uses. These kinds of choices call for a team of scholars, programmers, information specialists, performers, designers, archivists, and a variety of professionals with deep subject expertise to work closely to address an array of issues that no one person has the expertise to resolve.

Though collaboration has a long history in the humanities, with editorial projects and field work cited as examples, a consensus emerged that there are certain features of digital collaborations which are stickier than those we have known before. To a large extent they arise from the claims of intellectual property, broadly conceived. The matter of who has which rights over the expression of an idea can create barriers for pooling resources, gaining or giving access to certain materials, and determining how to apportion credit for work done in collaboration. Collaborations are also hindered by the widespread tendency for digital practitioners to amass local data silos that are not interoperable, often bundled with non-generalizable services and tools. This phenomenon, which occurs even with public-domain content, has been documented in Diane Zorich's report, A Survey of Digital Humanities Centers in the United States.[6] Even extra-institutional collaboration is often stymied by organizational and funding barriers between different schools and even departments on campus; and by the way the time and funding are allocated to faculty, versus professional and paraprofessional staff. It is as if the business rules that apply to the faculty and the business rules that apply to librarians, IT staff, and other critical collaborators are themselves "non-interoperable."

Finally, several participants spoke of their experience with the obstacles that exist in international collaborations, beginning with multiple languages and the varied levels of access to content, research funding, even bandwidth from country to country. Further than that, there are cultural mores and government

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[6] http://www.uvasci.org/wp-content/uploads/2008/06/dhc-survey-final-rept-2008_05_22-for-distribution.pdf

policies that shape basic, often unexamined, concepts of appropriate levels of access to content and behaviors among collaborators. And, given unanimous agreement that face-to-face encounters are critical for beginning and sustaining long-term collaborations, even when scholars operate largely virtually and asynchronously, the escalating costs of travel have added to the difficulties of long-distance collaborations.

b. Methodological issues

While theory has dominated academic humanities for several decades, methodological questions are now demanding most of the attention of digital humanists. They are doing so for very good reasons—indeed, for the very reasons that novel technologies and powerful instruments have been driving forces in the recomposition of such fields as physics, biology, and anthropology. New tools offer new possibilities, which in turn demands rigorous and self-reflective practices. Several scholars conceded that the humanities have been slower to recognize the technological components that shape their disciplines. They have resisted the integration not only of digital media, but even the multiple analog media of the 20th century, such as moving image or recorded sound. As one participant remarked quizzically, how can one study or teach any phenomenon of the 20th century without integrating with media studies at some level? Yet such integration has been the exception rather than the rule.

The digital humanities focus precisely on new practices that "bridge the gap between highly quantitative methodologies and deeply hermeneutical inquiries," deepening the possibilities for both. The sheer existence of the "abundant digitized record, while far from the total record of human expression, nevertheless challenges traditional, analog modes of research and writing and the notion of what counts as evidence." To an extent never before seen, the amount of material available becomes a critical factor in the types of research that can be done, which is another reason data that live in institutional silos or are orphaned in complex, nonstandard metadata schema lose incalculable value for the research community.

A key shared aspiration among participants is the integration of digital assets into the intellectual life of scholars, moving beyond use of digital assets the way we use books, emerged as a key shared aspiration among participants. They envisioned the integration of digital collections from museums, galleries, archives, libraries, and of course, the open Web. Ideally, the humanities community would enable a co-evolution between research and teaching on the one hand, and the development of technologies and enabling infrastructure on the other, similar to the way that scholarship has co-evolved with libraries and publishing over the past two centuries.

It is the nature of digital technology to introduce new vectors into research and publishing. So far, the disciplinary model has not been good at accommodating new technologies, though there are some fields, such as classics, which have taken to them naturally. To many participants, research centers seem an ideal place in which to explore the potentials of new technologies and how to integrate them into research and teaching. One model, the Center for History

[and New Media](#) at George Mason University**,** is pioneering the use of technologies within one discipline.[7] In other centers, we see research and funding grouping around specific applications themselves, such as such as visualization, GIS, or data mining. This is an effort to grapple with the fact that, as one participant pointed out, technologies have no respect for disciplinary boundaries. "Digital-technology practices often cut orthogonally to the existing disciplinary structures across entire divisions of the modern university: image technology in the medical schools alongside image work in our history departments, but data mining in the same medical schools alongside data mining in Classics." One center director noted that he is seeing faculty from the medical school on his campus approaching humanists wanting to learn more about aesthetics and performance, as they have become aware of the ways in which, as clinicians, they perform roles. Such collaborations are exciting possibilities, and beg the question of how to arrange organizations and allocate resources that support, rather than hinder, such collaborations.

An interesting grace note sounding throughout the discussion was a distinction between what one scholar called first- and second-generation digital activities. First-generation issues mainly revolve around building digital collections, either through conversion from analog sources or through the creation or harvesting of data collections. Second-generation issues come into play precisely at that point when scale becomes significant: these are issues of collaboration, scaling technologies across organizational units, embracing and trying to normalize new modes of communication—all taken on self-consciously as serious methodological matters. Digital humanities centers see the pressing nature of the second-generation activities as their raison d'être and the very reasons why they have formed themselves separate from so-called traditional humanities centers.

c. New modes of communication and community building

Many participants noted that informal modes of scholarly communication are encroaching on formal modes. Email, Web pages, mobile computing devices—these are all ubiquitous forms of communication now that command an increasing amount of a scholar's time, both as creator and consumer. Some pointed to fields such as law, history, and economics that have vital blogging communities that allow scholars to debate and set research agendas online. They constitute informal forums for what one scholar called "peer viewing and vetting." While some applications, such as open wikis, are bottom-up, often project-driven sites, there are others—blogs and closed wikis—that can truly be peer-to-peer. Some SCI participants reported that they see a strong move away from the traditional paper model of conference to a more workshop-oriented model. And yet, for all that is exciting and energizing about these trends, there is palpable anxiety among scholars that these activities may not be able to co-exist with, let alone adapt to, the presently accepted protocols of formal review and credentialing. They reported this as a major roadblock for intellectual engagement. More importantly, participants reported, they are concerned about the effects this rapidly-changing landscape is having on the upcoming

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[7] http://chnm.gmu.edu/

generation of scholars. Young academics feel pressured both to set standards for "being digital" and also, at the same time, produce the obligatory monograph (or two).

The vector of digital communication can be vertical, as traditional scholarly communication is, moving within the inflexible hierarchies of departments and disciplines. At the same time, the digital communicant really moves horizontally, communicating across time and space, across disciplinary and departmental boundaries, and across generations. This horizontal vector should be embraced and promoted. "One benefit—an inestimable one—might well be to involve the public to a greater extent than has recently been the case in important scholarly debates." But to the extent that digital communication leads to an interest in process over product, it stands as a challenge to the current model of scholarly communication, which, having grown up within the print world over centuries, put the premium on fixing and codifying text in the interest of ensuring that sources are reliable, authentic, properly referenced, and able to be credentialed.

The question of how centers could address the issue of the formalization of these informal modes—particularly with respect to credentialing—rose quickly to be among the most important questions of this institute. There was agreement that the advantages of digital communications—faster impact, broader readership, the ability to use more media, the fact that it is the natural language of doctoral students and undergraduates—cannot be denied and will only continue to grow. Thus the matter of reviewing and credentialing digital scholarly outputs was deemed urgent. Indeed, without dealing with this matter sooner rather than later, we are putting our students at risk, and possibly discouraging the most promising young scholars from entering the profession.

d. Organizational models and the ecology of centers

Humanities centers are well positioned to play critical roles in advancing the incorporation of new methods and new research agendas that arise from the use of digital technologies. How can these centers work together to achieve common goals? Some suggested that it would be best to view centers as parts of a whole, with each center identifying how they fit in and could work with others. But beyond this, "there need to be mechanisms to support deeper collaboration among [centers], so that they can operate as nodes on a network rather than as stand-alone enterprises. There continues to be great risk that there are substantial investments made to build and rebuild the same infrastructure. Strengthening the network of these organizations" must, therefore, be a priority.

There are existing networks of centers that do act to coordinate interests and actions, among them the Consortium for Humanities Centers and Institutes (CHCI), with over 150 allied institutions across the globe; and centerNet, an alliance recently forged among several dozen digital humanities centers.[8] [9]

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[8] http://www.chcinetwork.org/
[9] http://digitalhumanities.org/centernet/

Individuals from centers allied with one or the other consortia participated at SCI. These groups could be the framework through which centers could "work together and form alliances…to fill knowledge gaps and transfer expertise across campuses."

The *local, campus-based model* is typical of most humanities centers. The strengths of this model among CHCI institutions include independent revenue streams and donor bases, dedicated and able staffs, national reputations, and strong connections with the public. They constitute an "important element of the leadership of humanities as a whole." As local, campus-based units, they could serve as their university's node in a national network of emerging, digitally fluent scholarship, extending horizontally beyond the campus to bridge the vertical structure of the university. One director from a CHCI institution added that this group, which has been slow to recognize the impact of technology, now positively desires to accelerate the transformation of constituent centers to fully integrate digital technologies. The local, campus-based model is widely replicated among members of CenterNet as well.

Another model of a center is that of *national center of excellence*, those that attain national significance because of "their ability to draw scholarly talent to them and to provide in return scholarly goods—curated data, the tools to make sense of the data, and dedicated and innovative researchers who use those tools." Such centers that concentrate resources and talents would include the American Antiquarian Society, a center that has played a leading role not only in the advancement of American studies but also the history of the book and literacy; and the Folger Library, with its concentration of Shakespeariana.[10] Their challenge is to draw scholars to their physical homes as they provide greater and greater digital access to their collections. In the digital realm, there are centers such as the Interuniversity Consortium for Political and Social Research (ICPSR), that provide curatorial and preservation services in addition to research.[11] These centers, just like supercomputer centers, provide well-supported collaborative spaces to work with specialized materials and equipment that are far too expensive to replicate locally. Although these centers often exist outside of the university structure, as national assets which are open to all scholars, they have some claim to national, that is, public support.

Several new models were of particular interest to SCI participants. The *disciplinary model* exemplified by the Center for History and New Media is designed to work deep within a discipline to explore all the ramifications of creating and using digital assets within a particular field.[12] It encounters the issues of credentialing in the history department directly, even as it is developing peer communities that are quite capable of assessing the academic merits of digital scholarship. It is also encountering sustainability issues with respect to attracting and retaining staff who are experts in technology and subject matter. The Hemispheric Institute of Performance and Politics at New York University is another disciplinary center, one which is international in

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[10] http://www.americanantiquarian.org/
[11] http://www.icpsr.umich.edu/
[12] http://chnm.gmu.edu/

scope, and works both locally and virtually.[13] Driven originally by the need to share information resources digitally, a community of collaborators has formed around local centers, supported locally—physical centers exist in Mexico and in New York—and face-to-face meetings that happen every three years.

Another model that attracted considerable attention is *departmental*. The [Centre for Computing in the Humanities](#) of Kings College London (CCH) is a digital humanities center that has attained the status of full academic department.[14] As a department, it is academically rigorous. It has access to the same funding streams as departments—teaching income, research and grant income, national income, income from knowledge transfer and commercial enterprises, generating income from a wider public—and the revenue generated goes directly to students. According to CCH's director, the fact that it is embedded within traditional academic structures is precisely what makes it effective. Part of the interest of SCI participants in this model was curiosity about how digital humanities is construed as a discipline. Answers to these questions were addressed by the director's presentation.[15]

There is an institutional model, being developed at the University of California, Los Angeles and elsewhere, addressing the issue of scale by taking advantage of the infrastructure and disciplinary strengths that span the breadth of the university. The ideal is to create a flexible organization which to some extent exists at the university level. It would be able to share programmers, designers, administrators, staff, and other kinds of expertise across not only humanities disciplines but also across sciences and social sciences. The goal here would be to have an organizational model that focuses on intellectual and technical problems that might cross not only disciplinary boundaries—say, between ecology and literary studies—but also between schools, such as the school of arts and science and the medical school. An advantage of existing as a part of the university infrastructure is that one could avoid a center infrastructure that needs to be maintained separately. This would discourage the hunkering down in institutional silos that can happen when each department or field builds up its own infrastructure. Collaboration and funding would be facilitated by funneling all proposals through a pipeline. In this scenario, a large university would be able to incorporate not only many schools, but also the arts, museums, archives, and other rich resource centers that are often left standing alone.

e. Infrastructure

What are the core elements of an infrastructure that would be able to develop and sustain such centers? How can we ensure that the infrastructure—which comprises not just technology but also skilled staff and appropriate, dedicated funding—evolves to serve the needs of humanities research and teaching? Part of the answer to the second question is quite simply that more scholars should be engaged in digital pursuits. Speaking from their own experience, participants

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[13] http://hemi.nyu.edu/
[14] http://www.kcl.ac.uk/schools/humanities/cch
[15] See http://www.uvasci.org/wp-content/uploads/2008/09/commons.pdf

argued that the development of tools of any sort is an iterative process, one that involves designing and testing and assessing and redesigning the resources and tools that are designed for specific tasks. This integration of methodological and theoretical questions, of technology and idea making, and of changing the processes that lead to knowledge production and dissemination, is precisely what digital humanities both promises and demands.

The discussion of sustaining infrastructure led to several conclusions. First, participants defined a project as a unit of production, analogous to, say, a monograph or scholarly edition. What should be sustained from that activity is not the project per se, but the knowledge—skills-based as well as academic—that it produces. It is the infrastructure that enables distributed knowledge production, from technology to information resources to human skills and expertise, that needs to be sustained—just as libraries have been supported as core infrastructure for humanities. In some ways, what is sustained is the nature of the collaboration, which means that long-term or large collaborations are better at sustaining intellectual achievements than individual projects and one-offs. And it takes a long time to build up a good center. The pipeline not just of young scholars but also of technical staff and partners in libraries and publishing houses needs to be targeted for investment.

Participants identified a factor that is really impeding the smooth co-evolution of infrastructure and scholarship. It is the mismatch between funding, technology resources, and reward systems that prevails at every university. We already know that we need to develop hybrid modes of production that draw on people who have multiple skills, not simply relying on outside experts. But the institutional misalignments between the ways faculty are funded and how much discretion they have over the disposition of their time; versus professional and paraprofessional staff in IT departments, libraries and museums, whose funding (and other reward systems) lead to great difficulties in building good team work. We also see the difficulty on any given campus in matching existing technical resources—the supply, so to speak—with the scholars who need them—the demand side. Centers are a natural place where both the supply of resources and the demand for them can be aggregated.

3. Framework for Action

Agreement on shared goals for humanities centers—sustained progress towards to the co-evolution of technologies and scholarship to advance the humanities—calls for leveraging the strengths of both traditional and digital centers. There is a need for leadership among senior scholars and administrators to act now to "resist the Balkanization of digital humanities apart from the mainstream."

As next steps, participants urged action in two areas:
* more engagement with methods per se, including methodologies for engaging digital sources, evidence, and analytical and presentation tools;
* how to further discussions about what counts as a contribution to scholarship, including the possible impact a new understanding may have on current inadequate modes of publishing, of reviewing, and of credentialing scholarship.

Given these pressing needs, participants nonetheless urged that we proceed with great clarity about what roles centers can and cannot play. There was agreement that centers are advantageously positioned to grapple with methodological issues. Beyond formal affiliation with centers through programs such as fellowships, there are many ways people participate in a center's workshops and other services, making centers well-positioned to crystallize and transmit methodological learnings and practices. And here, the two international membership organizations, CHCI and centerNet, could provide leadership, thereby sending an important signal to humanities disciplines and departments that the time is ripe for normalizing innovations in digital humanities. Constituent centers, for example, could begin to assess institutional capacities, create better cross-campus collaborations between scholars and libraries, media learning centers, IT centers, and centers for the arts, humanities, and other groups that provide special services; and they can facilitate better information sharing among centers.

But while CHCI and centerNet are at the right level to manage the interchange among different centers, there were some cautions voiced that they may not be an appropriate venue for addressing credentialing issues. The fact remains, however, that credentialing is a major impediment to the transformation that we want to see happen. It is important to think carefully about what centers can do in this arena. Some suggested that centers can sponsor the development of prototype projects that would model the credentialing of multiple authorships. They could provide links to appropriate evaluators. And they could develop prototype collaborations with publishers, libraries, archives, museums, and other infrastructure, along the lines of publication series that centers currently sponsor.

In any event, it is hard to separate methodological issues from issues of credentialing. Humanities is about the interpretation and transmission of the human record. With libraries and publishers as trustworthy partners in the latter, print-based scholars have been able to focus nearly all of their attention on interpretation. This is no longer possible: scholars must reengage with their fundamental professional and ethical responsibilities with respect to the transmission of the human record. Digital humanities centers are forging new pathways to ensure the collection and preservation of digital information as it is born. Decisions about what to collect and to preserve cannot be made without the active engagement of scholars. It is, after all, scholars themselves who formed and directed archives, libraries, and publishing houses in the early days of their growth. Scholars then, as scholars now, developed deep and probing theoretical agendas that framed the nature of choices about primary sources and commenting on sources. Through collaborative actions, humanities research centers can bring about another period when theory and practice are joined to create new models of scholarly communication.

SCHOLARLY COMMUNICATION INSTITUTE 6:
HUMANITIES RESEARCH CENTERS

July 13-15, 2008

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SCHOLARLY COMMUNICATION INSTITUTE 7:
Spatial Technologies and the Humanities

University of Virginia
June 28-30, 2009

Abby Smith Rumsey
Director, Scholarly Communication Institute

We provide here a summary of the major points of discussion from the 7th annual Scholarly Communication Institute.[1] Discussions focused on the nature and implications of spatial tools and methods for scholarly communication. This meant exploring the conceptual as well as technical challenges of using spatial technologies; the impact of using them on established scholarly practices; the organizational models best suited to support and nurture spatial research; and how the infrastructure of scholarly communication, from IT and libraries to publishing, should adapt to the "spatial turn" in scholarship. For all the talk about transformation—even revolution—in scholarship brought on by the digital, discussions at SCI were informed by a sense of realism, even pragmatism, focusing on what these changes mean for university-based practices in terms of strategic opportunities and tactical adaptation. For additional contributions to the discussion, see SCI 7 participant responses to a pre-meeting questionnaire.[2] Direct quotation from conversation with SCI participants are noted with quotation marks but not attributed.

SPATIAL METHODS IN THE HUMANITIES

What is the spatial turn?

Discussions at SCI began by exploring the nature of the "spatial turn"—an exploration of space and place in time, supported by technologies that represent spatial and temporal dimensions and permit scholars to discover, analyze, represent, and argue various interpretations of spatial data. The origin of the interest coincides with and is probably related to the proliferation of personal computing devices that are location-aware (utilizing GPS, for example); as well as two- and three-dimensional mapping services on the Web. Most frequently cited was Google Earth, which allows visualization of heterogeneous phenomena in three-dimensional space and effectively acts as an armature for the presentation of information. It has become the gateway for researchers of all ages and abilities to discover and display spatial information, creating users curious and primed for further exploration. Perhaps most significant is that these technologies—here called "vernacular," because they are not designed for

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[1] http://www.uvasci.org/
[2] http://www.uvasci.org/for-participants/questionnaire-responses/

expert use exclusively—are so easy to use that a vast amount of contemporary knowledge production is spatially inflected, embedded with spatial data of one form or another.

There are fields—geography, archaeology, the classics, linguistics, landscape and architectural history, environmental history—which for decades have used the variety of sophisticated spatial analytical programs known collectively as geographic information systems (GIS). These disciplines study both natural and man-made spatial phenomena, such as landscapes, geophysical and political boundaries, transportation systems, urban development, agricultural regimes, and other historical phenomena that exist in the context of physical spatial systems, social spatial systems, and the interpenetrations of the two. Literary and cultural studies, including visual and religious studies, also seek to incorporate spatial representation and analytics in their work, but until recently have been more focused on artificial and imaginary spaces than on natural spatial phenomena.

In the context of SCI, the terms "spatial" and "geospatial" resisted precise definitions. Participants at times spoke of significantly different concepts under these terms, differences that usually reflected their disciplinary points of view and degree of familiarity with spatial technologies and spatial thinking skills. Most participants could agree that the term "geospatial" refers to something that exists in Earth space—that is, can be mapped onto a representation of the globe or the universe. They used "spatial" in a broad sense to encompass spaces that may not have a correlate on the planet or in the universe. And all concurred that "spatial" is shorthand for spatial *and* temporal; we need to avoid thinking of these as dualities.

<u>What is its potential for the humanities?</u>

Participants shared a particular interest in cultural and historical constructions of space and their representations. Because so many questions in the humanities address the diachronic, not just the synchronic, the ability to represent change over time is crucial. Change happens in time and space simultaneously. The diffusion of ideas, people, cultural artifacts, flora and fauna, is core to the work of geographers, historians, archaeologists, linguists, and musicologists, among others. To some participants, this means that the ability to represent and manipulate relative space has greater value than that of absolute space. But so, too, is the representation of historical and nonwestern cosmologies, sacred as well as secular spaces, artificial as well as natural places and events. The study of archaeological sites exemplifies the challenge of representing multiple layers of time and place in the same latitude and longitude. Not insignificantly, archaeologists often need to compensate for the fact that landscapes, soils, botanical specimens, and stratigraphic layers shift their longitude and latitude over time. Above all, humanists require that their tools be able to represent uncertainty, preserve various strands of historiographical interpretation, and account for the subjectivity of agency. Participants did not agree on whether one ontology or many are needed to represent all desired fields and attributes specific to categories of space, time, agency, and other features important to their discipline. Some scholars pressed

for a new suite of tools, other than GIS, that were not as difficult to learn or inflected with what they perceived as a scientific or quantitative bias. Others were pleased with the precision of GIS tools, pointing out that quantitative tools enable a great range of computational tasks that can run on massive data sets otherwise unintelligible to "the expert reader." Such tools, when used to interrogate narrative sources well-known to those expert readers, illuminate both and lead scholars to view their sources with greater depth perception.

However technologies and ontologies may differ among disciplines, all SCI 7 participants agreed that there is an unexplored universe of spatial information implicit in existing sources, both digital and analog. When "liberated" from a static analog medium and made legible to geospatial technologies, a whole new reservoir of information will be available to nourish new fields of inquiry. Historians and literary scholars of the 19th century, for example, can be daunted by the plethora of sources rich in locational and spatial information. The novels of James Fenimore Cooper, rail road freight tables, species observations, sound recordings, documentary images, and, of course, the massive print legacy of cartography—itself a result of information technology innovations such the production of cheap pulp paper and chromolithography— these are incredibly deep repositories of information that cannot tell us all they know until we make them machine-readable and interpretable. This is an enormous task.

Scholars want to have these resources digitized and georeferenced in order to visualize them, for, as architectural historians and geographers insist, it is the visualization which generates questions, not vice versa. "Visualization is not illustration." Scholars studying historical environments, both built and natural, are also looking for spatializations which they can animate to understand interactions among people and their natural environments. Archaeologists and architectural historians have been especially frustrated when confined to representing historical environments in static two-dimensional depictions. They now have the ability to model three-dimensional spaces and animate them with people and objects moving through space. They can add sound and create temporal progressions that provoke a range of questions not previously possible to ask.

The ability to incorporate sensorial experience and response within a temporospatial representation would add a uniquely important dimension to environmental modeling. A rich example described by an architectural historian at SCI was the case of modeling, in virtual reality, a Roman site about which there is extensive material evidence, as well as textual sources that, for example, recount the moment in a speech when the orator broke off because of the smell of cooking. With the exception perhaps of elevation—an elusive coordinate—virtual modeling is sophisticated enough to visualize landscape and incorporate avatars to model pedestrians flows, "viewscapes" (what is visible to an individual at a given moment in a given place), "soundscapes" (what one hears), and "smellscapes" (what one smells). It is in the act of modeling that questions are formulated, hypotheses proposed and tested, and knowledge is produced.

Disciplinary distinctions emerged most notably at SCI 7 when identifying desired tool functionalities, because disciplines distinguish themselves in large part not just by subject matter but by methodological approach. These distinctions strongly informed comparative evaluations of various technologies. In the instance of history, for example, scholars in the vibrant field of environmental history, which has many convergences with environmental science, want to have more and more spatial data digitized so that it can be processed and manipulated. Literary, visual, and religious studies scholars articulated greater priority for combining real space/time with imaginary space/time, depicting qualitative attributes of various dimensions, and representing nonwestern temporal and spatial regimes. As a rule, those humanities disciplines most influenced by the linguistic and visual turns in scholarship over the past few decades have not given priority to critical spatial reasoning.

Geographers represent a special case at SCI 7, in that they have long experience in spatial thinking and their field embraces both human and physical spatial systems. (It is, however, also true that the divide between those who do one or the other can be strong, somewhat analogous to the division among anthropologists between the physical and cultural.) That said, geographers have theorized spatial methodologies and reasoning in ways that may be of great interest to humanists who are grappling, perhaps the first time, both with issues of spatial reasoning and of spatial representation. Moreover, geographers are at an inflection point in their own discipline, re-examining cartographic conventions and seeking ways to represent uncertainty and ambiguity, subjectivity and agency, and qualitative attributes as well as quantitative. Geographers fluent in GIS were just as quick as others to note the inadequacies of existing GIS applications to the questions are emerging in their own field. This convergence of interest in the subjective and qualitative suggests a collaboration between geographers and scholars in a range of humanities disciplines may prove fruitful to both.

Spatial reasoning and representation

Reasoning

What is spatial reasoning? For one thing, it is consideration of both time *and* space, of diffusion and flow, change over time, and relative as well as absolute distance. Scholars who deal with spatial relationships—geographers and architectural historians, for example—argued strongly that we must disabuse people of the notion that spatial thinking is "intuitive," that one picks it up as a child, and need not be taught; anymore than "intuitive" language acquisition by children obviates the need to teach reading, writing, and rhetorical skills. "Spatial intelligence is a skill gained over time." Several participants have developed curricula focused on teaching critical spatial thinking and shared their insights and core concepts.[3] A concise formulation of spatial thinking identifies "the ability to visualize and interpret location, distance, direction, relationships, movement, and change over space and time" that draws on a core

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[3] www.teachspatial.org; links to power points forthcoming

set of cognitive skills that can be honed: "pattern recognition, recognizing, deducing, making decisions, and predicting." No doubt the widespread availability of vernacular technologies provides an opportunity to expand spatial reasoning skills. And the boon of "neo-geo" or the "new geography"—the notion that anyone can do geography, aided by commercial and open source tools, data, and platforms—spurs unprecedented levels of community engagement in doing what is, in effect, community or "volunteer" geography.

<u>Representation</u>

The reading and interpretation of maps, including historical maps, is a learned skill, critical to creating and using maps. School children in the 19th century were taught how to make maps in geography classes (themselves a result of the mapmaking boom of the time, caused in part by new information technologies). But it is a rare modern humanities scholar who acquires skill in either reading or making maps. The cartographic languages of abstraction differ from those familiar to discourse-based disciplines that now predominate in the humanities. One SCI participant suggested that we "go back to school" to study how maps and spatializations encode information. Certainly, before we can start using spatial representations both as evidence and as rhetoric of argument we must understand precisely how these forms do their work.

"Spatialization" is a useful way to describe taking things that are not inherently spatial and creating a mechanism to display them. This would include a large set of visualizations depicting spatial and temporal dimensions of a given phenomenon or object, such as network visualizations, kinship mapping, cultural diffusion routes, perceptual space, and subjective, agent-oriented views of place. While some suggested that spatialization would prove most useful to humanists to the extent that it shifts "from the actual to the representational and subjective," others rejoined that basic cartographic literacy tells us that *no* map is literal, or accurate, or undistorted. Everything depends on the scale used, what information is included and what excluded, which conventions and symbologies are chosen to encode information and, of course, in which projection the landscape is depicted. Even maps that have no correlation to Earth space cannot be immune from the biases of spatial representation as such. Each map "has an attitude," and no matter the mode of representation, each map must be used with appropriate critical skills, just as one approaches any other form of knowledge representation, from a narrative to a statistical table or a documentary film.

So what are maps good for? Maps function as navigational tools: to find one's way from one place to another; to represent the world or cosmos in one integrated space as macrocosm; to frame a smaller view of the world, a microcosm, in order to home in on a set of details for analysis and problem solving; and to place representational objects in a shared space—a context—to better understand their relationship one to another, as seen in maps depicting kinships, concepts, vectors of communication, and so forth. As cultural artifacts, maps become interpretive objects that themselves play roles in events, decision-making, propaganda and persuasion, and inspiration and appreciation, among other things.

Finally, by way of analogy to the field of visual studies emerging from film and media studies, one SCI participant proposed "spatial studies" as a discipline emerging in the not-too-distant future. In fact, at the University of California, Santa Barbara, there is a spatial studies program, sited in the Center for Spatial Studies, that will offer an undergraduate minor and form part of an interdisciplinary PhD.[4] This program reaches broadly across a range of humanities and social science disciplines and has brought in participation from religious studies and area studies scholars. The impetus for this comes from UCSB's geography department. But on different campuses, such impetus will come from any group that coalesces around spatially-enabled humanities. Down the road, at the University of California, Los Angeles, there is a new undergraduate program, Digital Cultural Mapping, led by scholars from the fields of architectural history, archaeology, literary studies, and history.[5] The University of Redlands also hosts an interdisciplinary program, LENS, to support spatial studies.[6]

Spatial tools and concepts should be applicable to the description and analysis of both the natural and the social worlds. But the social world is tougher. How much harder is it to map a home than a house? A house can be represented by the image of a roof or a simple polygon on a map. But a home suggests inhabitants and activities, emotional linkages, social bonds, and other artifacts and behaviors that are harder to represent in stasis or concretely. When leaders of the UCLA Digital Cultural Mapping program presented a view of their work at SCI 7, they used the word "scape" in compound forms repeatedly—not just landscape, but also viewscape, soundscape, even smellscape, meaning that which one could see, hear, or smell within the perceptual circumference of a person or an agent. These are all terms that imply a subjective point of view. Perhaps when we are able to develop methods to enable representations of the kinds of subjective experiences represented in these compound "scape" words, the promise of spatial studies for the social and cultural worlds—spatial humanities, as it were—will be closer to realization.

TECHNOLOGY AND ITS DISCONTENTS

This topic, more than any other at SCI 7, brought out the inherent tension between the needs of scholars pursuing careers within the academy and the promises of technology to democratize scholarship, research, and citizenship. Sounding like an ostinato through the discussions was a call for "simpler and easier," quickly followed by a daunting list of sophisticated functions that researchers require to do their work. On the one hand, people want technologies that are easy to use but able to support ambiguity, uncertainty, and subjectivity; on the other hand, there is dissatisfaction with the way that certain powerful and easy-to-use applications, such as Google Earth, are too often inaccurate or imprecise, with base layers changing without notice and

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[4] http://www.spatial.ucsb.edu/
[5] http://keckdcmp.ucla.edu/
[6] http://www.spatial.redlands.edu/lens/

some locations in the wrong place. To some extent, the problems of functionality relate to the appropriateness of scale to task: some vernacular applications serve global-scale phenomena well, but prove wholly inadequate for display and analysis of highly articulated spaces requiring precision of measurement, either absolute or relational. Some technically complex tools are simply too laborious to use for a quick-and-dirty operation or visualization.

There is no either/or here. We need a continuum of tools, from the relatively simple yet powerful, such as Google Earth, to more sophisticated and resource-intensive such as desktop GIS or Web-service-based geospatial delivery spheres. We also need a continuum of training to expose scholars at all stages of their career to these tools. A third need is to have a suite of tools and methods that address not different skill levels, but different time frames. There should be some applications and methodologies that are good for semester-long undergraduate courses, some that are geared to the time-frames of graduate students, and some that are optimized for the decades-long research projects that scholars undertake over the course of their careers.

Reliability, accuracy, and authority are major concerns, and this is where vernacular technologies are perceived to fall down. Applications easily built onto lightweight Web mapping services can be irreparably damaged by routine events like a new release of a browser. Simple, free, or commercial mapping services often do not handle toponyms well. And librarians at SCI 7 expressed concern about the amount of effort it will take to convert and geo-reference historical sources for use in GIS applications. They point to crowd-sourcing as a possible response to the scale issue in, say, the georeferencing of historic maps. While conceptually strong, the idea was met with skepticism by some scholars because questions of accuracy and above all authority in the vetting process become important for scholarship.

In discussions about the need for better ontologies, some librarians at SCI likewise proposed using folksonomic frameworks for crowd-sourced data. This might achieve scale, but that also met with skepticism with respect to accuracy and credibility within the academy. This may not matter in everyday use, or in the classroom. But faculty want more, in part because of their own research needs, and in part in recognition of the fact that scholarship based on folksonomies and crowd-sourcing will not be viewed as authoritative within the academy.

This is an area that needs a great deal of work, both on how to make highly functional technologies more user-friendly, and in thinking through what levels of accuracy, authority, and reliability are necessary for which scholarly tasks. It is a conversation to be carried out within disciplines, but also across them, and with software developers. We certainly do not wish to lose sight of the fact that lightweight, mobile spatial technologies, simple as they may be, have become powerful tools for collaboration, participatory research, and teaching. "Expertise is overrated in this area," one expert cautioned, because amateurs are able to bring new perspectives into the mix without the limitations of existing paradigms.

Spatial data ethics

A salient feature of Web-based information is a level of imprecision about who is accessing data and for what purposes. Firewalls put in place to protect sensitive data are routinely breached. This is of particular import with respect to geospatial data because location information can be extremely sensitive. Though it is important to know what can and cannot be mapped for intellectual reasons, it is also critically important to know which *should not* be mapped for ethical reasons. This might include mapping the territories of species at risk of extinction or contamination, locating sensitive archaeological sites, and pinpointing spaces sacred to groups. Revealing location information can result in a violation of privacy or threat to personal security. In addition, there is always the need to reflect on whether a given spatialization is prone to manipulation or "digital malpractice," paying particular attention to the fact that online resources cannot be assured of security, appropriate and respectful use, or privacy. Each discipline, as it develops digital best practices, should make explicit what its ethical guidelines are with respect to data use and sharing. And it should do this with full awareness of the fact that most geospatial data are in the custody of governments or their agents, not all of whom believe in open access to information. People have been arrested in China and elsewhere for making maps with GPS devices.

SCHOLARLY PRACTICES AND MODES OF WORKING

The combined processes of research, analysis, presentation, vetting, publication, and teaching by which scholars advance knowledge and inquiry, have been disrupted by the introduction of digital technologies. Services that were successfully bundled in the print regime are now unbundled. Efforts to re-integrate these services in the digital realm require thoughtful deliberation, for simply translating analog practices into digital has been tried and proven largely unsuccessful. Besides, part of the excitement and promise of new technology is that it forces a root-and-branch re-engagement with fundamental aspects of long-standing scholarly practices. This rethinking extends from the process of converting analog content into digital form—a process that includes the development of ontologies, gazetteers, taxonomies, and other categorizations—to the very nature of making an argument and publishing that argument in a form that is readily reviewable by peers.

Three key issues emerged in discussion: the changing nature of knowledge production; the integration of new practices into existing structures of the academy; and the impacts of these new practices on communication and dissemination.

The changing nature of knowledge production

SCI 7 participants agreed that the use of spatial methods and technologies changes the nature of knowledge creation, and that this change produces serious challenges to existing processes for validating and credentialing scholarship. The latter was described as "not a barrier, but a wall—full stop." Interestingly, scholars who reported difficulties in communicating to their peers

how knowledge production is changing and why that matters reported dramatically different experiences in their classroom. Pedagogy has been reinvigorated in the process of using spatial technologies with students. The draw for students is the process of learning, not the tools themselves. Many scholars reported that "the best teaching" they do is in the laboratory or design studio, the spaces that they have configured for students to work collaboratively to build and to learn. And this is what is marks the new knowledge production: collaboration and iterative discovery.

Some argued that scholars should master all of their tools before they use them. But others saw collaboration as a way to engender an efficient division of labor, keep up with the rapid pace of technology change, and obviate some of the "life-is-too-short" rationale for avoiding new techniques. All could agree on the importance of learning as much about tools and technology as necessary to understand potentials and pitfalls, to be able to articulate a clear vision to their technology and design partners in the project, and to learn from them. The real work happens in the dialogue among members of a collaboration that involves doing, learning, and incorporating that knowledge into the next phase. Design, build, test, and begin again. Not only does this process generate questions; knowledge itself is generated through the interactions among people with complementary expertise. This iterative process—develop a project, build models or visualizations, and critique them—is the standard model of investigation and discovery in architecture and design. As one SCI participant put it: "Model building is a discovery process." Devising the abstractions necessary for meaningful visualization, like the categorization demanded by the creation of ontologies, is understood as a deeply scholarly activity. Making progress in these areas constitutes an advancement of scholarship. And perceiving that it is the process that generates knowledge, scholars increasingly wish to capture the process of knowledge production in scholarly communication. Current models of reviewing and publishing are not set up to do this. What would need to change? To answer this question, participants began to unpack the nature of argument and evidence in spatial scholarship.

<u>Argument and presentation</u>

Scholarly communication both begins and ends with the argument and presentation of evidence. The most vexing questions center around the formulation of questions and creation of arguments in spatially enabled humanities. Archaeology and architectural history have long been self-consciously engaging with critical spatial reasoning. These disciplines used both mapmaking and modelmaking as integral parts of knowledge formation well before the advent of digital technologies. For SCI participants from those fields, discussions of how spatialization and visualization can generate questions and mount arguments were unproblematic. While they were quick to point out all the things that they wanted to do but were not yet able to with technology, there was agreement that mapmaking and modelmaking are the processes by which questions are formulated, answers proposed and tested, and knowledge created. As a planning and design scholar noted, "it is the visualization that generates the questions, not vice versa." In many ways, the digital liberates scholars from focusing on fixing knowledge into static form to

produce a recognizable output—traditionally the monograph or article. For historians the answer to this question was less clear. It may turn out to be that the monograph continues to be the preferred form for a long argument, and articles will be used for presenting the results of more discrete investigations. But the presentation of evidence should not and will not remain the same, if only because the nature of spatial evidence cannot always be presented in print-on-paper forms.

A common model for presentation emerged during discussion, with each discipline able to articulate the specific forms in which the elements relate to each other within their own domain. Roughly speaking, scholars proposed the production of an "edition" that might be a working paper, an article, a monograph, a video, or some form which presents the core of an argument. Behind that would stand a database to contain models, archival materials, multimedia elements, whatever constitutes the evidence and documentation of the ways that the scholars use the evidence to produce their results. If adopted, this model of the "edition plus database" would have ramifications throughout all of scholarly communication.

Validation and credentialing

Questions of validating and credentialing scholarship are fundamentally about impact. As one administrator phrased it, "What a provost wants to know is whether his faculty are the ones that are being recognized as field leaders. Are my faculty making a difference? Are they changing the conversation?" Each discipline has its own metric for assessing impact, but the important thing is that an authoritative community of peers has made that assessment. The challenge for spatially enabled humanities is the nature of that authoritative community: "What is needed for credentialing is credibility. We lack such an authoritative community with respect to spatial scholarship." Discussion quickly turned to how we could build such an authoritative community by identifying leaders in the field of spatial scholarship across a range of disciplines and bring them together as a group to model peer review. As a member of the SCI steering committee noted two years ago at SCI 5, when we focused on visual technologies, a group of leading scholars in visual studies emerged and committed themselves to modeling and testing ways of validating, credentialing, and publishing new-model scholarship in visual studies.[7] Spatial studies in the humanities is in a far more primitive state than visual studies was two years ago. So the real question is: how are we going to stimulate growth in this area?

One solution would be to assemble a group qualified to assess spatial digital scholarship, regardless of discipline. A first step might be to bring together scholars from those disciplinary societies who have made significant progress in this area, such as the Society of Architectural Historians, with others—environmental historians were mentioned as one possibility—to develop case studies and present models of high-impact scholarship using spatial technologies. These case studies would serve as exemplars to other disciplines.

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[7] http://www.uvasci.org/archive/visual-studies-2007/

There are other models of peer review, such as that developed by NINES[8] for online literature of the 19th century; both its development process efforts to promote adoption of it by the community it serves is highly instructive.

The power of this idea—developing and aggregating case studies of high-impact spatial scholarship—lies in sharing models across disciplinary and institutional boundaries. While the primary authoritative community is constituted by peers within a single discipline, they are embedded in turn in a web of relationships and dependencies. Everybody needs to be exposed to this work, from senior faculty unfamiliar or unsympathetic to it, to professional societies, department chairs, publishers, and senior administrators, because each plays a role in deciding what kinds of scholarship and which scholars are recognized and promoted. Humanities centers are uniquely situated to host such activities that bring these groups together.

Modeling case studies of high-impact spatial scholarship would allow the community to deliberate the more difficult issues in this area, such as the need to develop mechanisms for granular crediting of authorship and ensure access and persistence over time. Both issues are particularly difficult if collaborators come from multiple institutions. It would also provide an opportunity to bring evaluators and readers together with the producers of scholarship, so that both sides of the review process could develop shared understandings about the nature of the content under review, the nature of individuals' contributions to it, and the nature of the compromises that scholars and reviewers need to confront and resolve in order to produce scholarship accessible to the community it addresses.

Precise modes of peer-review and publication vary from field to field. In the case of geography, for example, two models coexist: single-author articles are the standard for social geographers, and multi-author works for natural geographers. But ethical issues crop up across all disciplines and need to be addressed within any collaboration, such as a commonly-observed gender bias and a devaluation of design and technical contributions, biases that are often conflated in practice. As one experienced collaborator drily noted, "evaluators tend to assume that the intellectual part, the 'hard part,' is done by men and the 'pretty part,' the design, by women."

<u>Socializing results</u>

Faculty: As we develop models of spatial scholarship across disciplines, we need to socialize the epistemologies and practices that enable them. Given the current economic downturn, combined with long-term trends that put great pressure on the tenure system—60 percent of full-time faculty hires are off the tenure track nowadays—SCI participants expressed dismay that we are creating an increasingly conservative generation of young scholars. Students, like others in the academy, are highly attuned to existing power structures. Being at the bottom rung of the academic ladder and trying to climb it means that they are of necessity more risk-averse than those who have made it to the top. Advice

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[8] http://www.nines.org/

from on high, urging pre-tenure scholars to forge the new path of digital scholarship, founders on the shoals of pragmatism. The surest way to widen the path for innovative young scholars and to integrate new modes of working and knowledge production into existing structures of the academy is to engage leaders, beginning (but not ending) with faculty. The ULCA Digital Cultural Mapping program, for example, has a module for faculty education that precedes that for students. It addresses the epistemological foundations of spatial scholarship, so that faculty and students will be less likely to look at visualizations as "mere illustrations" to a text. When introducing the unfamiliar, the right labels can open peoples' ears. Several scholars reported that they never use terms such as "digital humanities" or "geospatial data" when they can name the concepts they are driving to, such as movement and migration, change over time, and location in space and place.

Administration: An important point of leverage in scholarly communication is campus administration, from department chairs to provosts and presidents. Some SCI 7 participants cited departments as the least flexible social unit in the landscape, and shared strategies to elide them, including but not limited to going around the department directly to the provost. On some campuses, such as the University of Southern California, scholars doing innovative work that crosses department boundaries have crafted formal guidelines for interdisciplinary reviews. Interdisciplinary work has become an explicitly-stated goal for tenure. This could be a model for collaborative work review and for reviews of spatial scholarship as well.

Learned societies: Many societies are facing a crisis in membership, in part due to the collapse of a business model dependent on subscriptions to print journals and attendance at annual meetings. One way to re-energize membership in professional organizations and draw attendees at all stages of their career is to offer workshops on various digital technologies, especially spatial tools and methods. This instruction could be given at discounts to members of the society, and geared to several levels of interest, from information-only to highly detailed hands-on sessions. In addition, some societies—the Society of Architectural Historians and the Modern Language Association are two—have adopted statements about consideration of digital production for tenure and promotion.

Impacts on publishing and dissemination

While the steps that constitute scholarly publishing remain fundamentally the same—peer review, editing, distribution, and preservation of scholarly output—scholars at SCI argued for shifts in content and substance. They particularly advocated focusing on capturing and preserving parts of the discourse itself, not merely its fixed outcome. The exigencies of the print-on-paper regime have been cited for years as reasons for scholars to compress arguments and edit out evidence—too expensive to publish it all, they are told. But digital creation and delivery have obviated the financial need for such compression and editorial discretion in our daily lives. Scholars are wondering why their professional communication should be any different. The real arguments today for tightly edited presentation of scholarship rest in respect for pressures on the time of

our peers, whom we expect to do the reviewing. Time and attention are the scarcest resources in any information ecology. That said, one of the most valued affordances of the digital is interoperability of data and of discourse itself. Scholars are wanting—expecting—more and better and faster everything, including more data, better searching, faster time to publication, all resulting in broader reach. The ramping-up of expectations as a result of digital technology is by now a familiar story, but neither publishers nor libraries have the increased resources to meet those inflated expectations.

Editors and publishing houses continue to be immensely important for the publication and dissemination of scholarship. No scholar at SCI 7 advocated for removal of the roles of publisher or editor in favor of some other way of "going to press." As one publisher pointed out, presses are also pushed by the same technology as scholars to revisit fundamentals of publishing—redefining the role of the editor, designer, distributor, and above all, the business model (now often referred to somewhat euphemistically as a "sustainability model"). Presses want to work closely with scholars in order to rethink and remodel their publication processes. This begins with the back-end platform, because existing production processes break down in the digital. Design, distribution, and marketing have to change. But they remain vitally necessary to scholarly communication. Publishers know that they need new business models, yet there is no blueprint for this transition. It is not clear to anyone which player in scholarly communication is responsible for which task. And who, in the end, is responsible for long-term stewardship of scholarly discourse? Scholarship that does not persist does not "count" as scholarship.

As one SCI participant with a book in press said, publishers are not as scared of the demise of the monograph as scholars may assume. But they do need help in figuring out new modes of editing and publishing, and this they cannot do without scholars' guidance. One model that we might consider in the near term is the prototype for digital media publishing in visual culture studies being developed by the Network for Visual Culture, which emerged from SCI 5.[9] This group of scholars has worked intensively for two years to forge partnerships within their own community and with a set of archives and publishers, each of which has compelling incentives to work with each other to explore new models. The archives want users, the users want access to archives and to publishers, and the publishers want to publish the work of scholars. This group is focused on iterating one or more models in the near-term as a crucial first step. Ultimately, publishers and scholars should decide how to present the progress of scholarly work over time, so that scholars can be engaged in long-term research projects and publish during the process. This is likely to require a re-examination of the ecology of libraries, scholars, and publishers.

This ecological rebalancing and reconfiguration will require scholars, professional societies, presses, and libraries to work hand-in-glove to sort out which parts of a scholar's output should be published and preserved in which forms. Scanning the horizon for examples, an architectural historian who uses virtual reality pointed to the scientific model of publishing, whereby scholars

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[9] http://www.uvasci.org/archive/visual-studies-2007/

routinely post working papers to the field to inform others of their research findings, solicit (pre-print) peer comments, and make data available as appropriate. In order for this model to work in the humanities, scholars would need to agree on what such a working paper or an edition would look like. These practices, too, could be modeled in a workshop setting.

Finally, a publisher at SCI suggested, as a logical next step, that a group of scholars, working through a consortium of professional societies, put out an RFP for publishers to provoke response and indentify potential partners.

<u>Audiences old and new</u>

Discussions of validation and credentialing raise the question of audiences and reflect the abiding friction between the predominant vector of communication in the academy—vertical—and the vector of communication intrinsic to the digital—horizontal. Validation can occur in all the ways impact can be measured: successful grant applications, non-academic publications with public or policy impact, keynote speeches, articles in major newspapers, and media interviews. Some fields are conscious of the need to have influence not only within the academy, but beyond it—to influence public policy, federal research directions, and otherwise set the terms of public and government debates. The barriers to adoption of and adaptation to new information technologies appear to be highest in those fields that do not value impact outside of a relatively closed circle of discourse participants.

The fundamental challenge posed by the Web to any closed circle of communication is the porousness of online discourse. Particularly with respect to spatial technologies, the openness of the Web has given birth to a burgeoning and enthusiastic world of neo-geography, born of the notion that anyone can do geography using the tools now available online. Geographers at SCI 7 are exploring the impact of "neo-geo." They take the phenomenon as an indicator of the growing importance of spatial thinking in our society, something which they, as professionals, are committed to promoting. By encouraging such developments, and actively working with groups of students and the general population, they can advance spatial literacy at the same time they begin to obviate the "so what?" question by getting more people involved. They asked if there were a similar phenomenon in the world of humanities—neo-humanities, as it were. Are there people doing community-based humanities, intensively engaged with the subjects and methods of humanistic inquiry? If not, why not? One project, [Imagining America](), sees readily accessible digital data and tools as an opportunity to cultivate in our students and the general public interest in humanistic inquiry.[10]

In another case, a leading member of the Society of Architectural Historians reported that her community is reflecting on its new audiences and how best to reach them. To some degree, SAH's engagement with the public has been core to its mission for decades. But by looking beyond its own membership and fellow academics, SAH is seeking to engage more people in its activities. New

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[10] http://www.imaginingamerica.org/

audiences can and should be part of an emerging sustainability strategy for the 21st century. These audiences will be recruited and loyalties retained primarily through mobile technologies. And if SAH collections and services are not available on mobile devices, those of some other entity, probably commercial, will be. This is an opportunity we seize or ignore at our own peril.

ORGANIZATIONAL MODELS AND INFRASTRUCTURE

ORGANIZATIONAL MODELS

Collaborative scholarship demands new organizational models. In imagining an ideal organization that would bring scholars, technologists, librarians, and information resources together, SCI participants said the appropriate environment would look like a laboratory or design studio, in which space is configured to encourage collaboration, easy interaction with tools and technologies, and display of research results for critique and learning.

Where and how one situates such as space will depend largely on the specific culture of each campus. At some institutions, a "nondenominational" centralized administration of enterprise-wide GIS software is deployed across the whole campus. At the University of Virginia, for instance, these services are provided by the Library-based Scholars' Lab. On others, laboratory space is sited within disciplinary departments. Especially in schools with strong geoscience, forestry, or environmental science programs, such as UCSB, there is sophisticated GIS software is provided in multiple discipline-specific settings. At Stanford, the domain-specific grant-funded Spatial History Project supports a small number of investigators in history and is housed outside of the history department.[11] At the Centre for Computing in the Humanities at Kings College London, geospatial scholarship is diffused throughout the center, which is itself an academic department.[12] If anything, the multiple answers to the question "where and how" show how important spatial technologies are in many different disciplines. Achieving the right balance between provision of services at scale and the customizing of services to meet domain-specific demands involves attention to cyberinfrastructure development on each campus and to achieve real scale—among campuses.

INFRASTRUCTURE

Our Cultural Commonwealth, the ACLS report on cyberinfrastructure for the humanities and social sciences noted that humanists have lost rapport with their own infrastructure.[13] Further, it suggested that the introduction of new information technologies provides an opportunity for scholars to re-engage with their partners in scholarly communication—librarians, archives, museum curators, and technologists. A recently-funded round of NEH workshops at the University of Virginia's Scholars' Lab, the Institute for Enabling Geospatial

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[11] http://www.stanford.edu/group/spatialhistory/cgi-bin/site/index.php
[12] http://www.kcl.ac.uk/schools/humanities/depts/cch
[13] http://www.acls.org/programs/Default.aspx?id=644

Scholarship, is designed to bridge that gap by offering training to librarians, information technologists, faculty, and graduate students. [14]

Universities at the highest levels are part of the problem. Information technology is too often looked at as a utility, not a strategic tool to enable research and learning. Scholars talk with enthusiasm about the affordances of the digital—interoperability, better searching, access to greater amounts of data—but none of this is easy without alignments among key actors in the information landscape, including strategic alliances among different departments, schools, and universities. One of the promising signs of the recently formed HATHI Trust text repository is that negotiations for this multi-university initiative took place among CIOs, ensuring that it will be integrated into the core technical infrastructure of each participating campus.[15]

This need is especially acute with respect to spatial data and infrastructure, because of the scale of the data, the complexity of file formats, and the proliferation of proprietary software and information. Spatial data require new models of cooperation among libraries and data repositories to provide networked storage and delivery, guided by clear policies about access and ethical use. Meeting these challenges has been immensely complicated by the series of recent cutbacks in all areas of libraries as a result of falling university budgets. As more and more researchers use geospatial data and programs, their expectations grow. They go quickly from discovery to wanting instant functionality: to be able to comment, annotate, visualize, and mash up. Map librarians at SCI reported that their users do not want to learn to use software, they want easy means of discovery and visualization.

What about the use of Web-based services such as Google Maps and Google Earth as platforms that integrate digital objects and are good for search and discovery? They provide very simple tools with highly desirable affordances. For example, Google Maps can link to sound files and there are services to geolocate free-form text. In this way users can take existing, implicit "geoknowledge" and make it explicit and visual. One scholar noted that he and his colleagues are really becoming "hooked" on these applications. But they are also concerned that are they are becoming dependent upon a commercial entity. Why, they wonder, can't universities step in and provide similar services? That way stewardship and persistence would be in the hands of our own community. One participant noted that, on his campus, there is a project that writes directly to Amazon S3. As a precaution, the project creators have written an interpretation layer that lets them plug in something other than S3 in case that commercial service goes away.

Most of what people want to do lies somewhere in the middle space between vernacular and expert technologies. How do we move from one to the other? A software entrepreneur at SCI 7 remarked that vernacular tools have had to come back to geographic theory to advance, just as complex tools have had to evolve simpler, better interfaces. He suggested that geographers could be

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[14] http://www2.lib.virginia.edu/scholarslab/geospatial/
[15] http://www.hathitrust.org/

important in working out solutions that act as transitions between the simple and the sophisticated.

Bundling services on top of repositories may begin to get at part of the scaling issue that is intrinsic to geospatial data use and management. SCI participants pointed to several types of repositories with high functionality, such as ICPSR and Harvard Dataverse in the social sciences [16,17]. The Society of Architectural Historians is building SAHARA for architectural images; they plan to connect this system to their journal so that there is seamless linking between the journal and image data.[18] Architectural historians note that a number of 3D models exist in data silos, inaccessible to parallel projects. Would it be possible to develop something similar to a JSTOR service for architectural models? A funder present at SCI reported that publishers have repeatedly expressed their interest in and willingness to house data which supplement print volumes. This should be an item included in whatever RFP scholars or scholarly societies put out to publishers.

Wherever data reside, it is important for their depositors to have explicit agreements about what will happen to the data over time. Best practice would involve a contract between the data owner and a repository. Such agreements are important to address concerns about persistence that come in to play in the evaluation of scholarship. As long as "the digital" is assumed to be ephemeral, it will not be counted as "real scholarship."

Agreement upon and mandatory use of standards is key to building shared repositories and curatorial services. One way to promote the use of standards is for funding agencies to require their use in grant-funded work.

NEXT STEPS

Scholars should now begin to seek strategic partnerships with other agents and organizations in scholarly communication to move ahead on several fronts. These include working with:
- *developers and technologists* on tools and technologies;
- *professional societies* that help to form and promote standards of scholarship within a field, not least by individual scholarly validation, publishing outstanding scholarship, and setting ethical guidelines for the profession;
- *publishers and librarians* can collaborate with scholars to model new forms of scholarly communication, dissemination, and persistence; and
- *administrators and CIOs,* to begin mapping a strategy for building a shared geospatial cyberinfrastructure to support the data management and services necessary for spatial scholarship.

Above all, advancing scholarly communication in this area means that those engaged in spatial humanities across multiple disciplines should come together

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[16] http://www.icpsr.umich.edu/icpsrweb/ICPSR/

[17] http://thedata.org/

[18] http://www.sah.org/index.php?src=gendocs&ref=HOME&category=Sahara%20HOME

to form the "authoritative community" able to develop methods to: validate spatial scholarship; promote awareness of the power of spatial scholarship by engaging senior scholars and disciplinary leaders, through professional societies and at campuses humanities centers; and seek partnerships with willing publishers to publish work using spatial visualizations and methodologies. Spatial technologies in the humanities have the potential to deepen our understanding of change over time, to provide flexible platforms for research and discovery, and to bring the riches of humanities scholarship within reach of an ever more mobile population.

SCHOLARLY COMMUNICATION INSTITUTE 7:
SPATIAL TECHNOLOGIES AND METHODOLOGIES

June 28-30, 2009

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Staffing SCI

Faculty of the Scholars' Lab will take notes on the proceedings of SCI 7 as well as an upcoming Institute for Enabling Geospatial Scholarship in order to compile a set of reports and white papers. These are:

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SCHOLARLY COMMUNICATION INSTITUTE 8:

EMERGING GENRES IN SCHOLARLY COMMUNICATION

University of Virginia Library
July 14-16, 2010

Abby Smith Rumsey, Director
Scholarly Communication Institute

The following essay attempts to represent and synthesize the rich discussions of SCI 8, the eighth gathering of the Scholarly Communication Institute at the University of Virginia Library, especially the many original insights that emerged into the ways technology transforms the process of creation, dissemination, stewardship, use, and above all, reception of humanities scholarship.

Additional materials generated during SCI can be found at http://www.uvasci.org/archive.

THE NEED FOR NEW MODELS OF SCHOLARLY COMMUNICATION

Current print-based models of scholarly production, assessment, and publication have proven insufficient to meet the demands of scholars and students in the twenty-first century. In the humanities, what literary scholar James Chandler calls "the predominating tenure genres" of monograph and journal articles find themselves under assault from a perfect storm of major dislocations affecting higher education. Publishers are struggling to remake business models that are failing. Libraries strain to keep up acquisitions of print materials as the supply of and demand for digital publications escalate. The reliance of faculty on tenure and review models tied to endangered print genres leads to the disregard of innovation and new methodologies. And mobile, digitally fluent students entering undergraduate and graduate schools are at risk of alienation from the historic core of humanistic inquiry, constrained by outmoded regimes of creation and access.

SCI 8 Approach

The goal of SCI 8 was to reimagine the ecology of scholarly publishing, based on careful assessment of new genres, behaviors, and modes of working that have

strongly emerged. The Institute focused on new genres in humanities scholarship because they are leading indicators of an information ecosystem that centers around digital evidence, digital authorship, digital dissemination, and digital use. We use the term "genre" loosely to comprehend those natural forms of discourse and favored formats of presentation that carry the weight of scholarly research and dissemination nowadays. In particular, we looked toward authoring and publishing activities in which the expressive capabilities of a particular digital technology or set of methodologies are well-suited to the goals of scholars and to reception by their intended audiences.

As in other areas of publishing—music, movies, television, fiction, journalism—the Web has effectively unbundled the production and consumption of scholarship. It has also simultaneously undermined publishing business models and library budgets, radically altered reading habits, and called into question the core assumptions upon which scholarship is assessed and validated. How will the fundamental processes of scholarly production—research and analysis, publication and dissemination, stewardship, and use—realign themselves in a digital environment? How will scholars go from digital evidence to digital publication? What would be an appropriate division of labor among the actors in scholarly communication: scholars and learned societies; libraries, museums, archives; publishers; technologists; higher education administration and funders; and the multiple audiences and users who desire online access to humanities content? Where are these new communities constituted, how, and by whom?

We explored these issues in several stages, which included:
- scanning trends both within higher education and beyond that are shaping scholarly discourses;
- examining the processes of scholarly communication as currently constituted, as well as actors involved and the roles they play;
- presenting working examples of new-model scholarship by participants; and
- reflecting on these topics from the perspective of the critical engines sustaining scholarly communication—libraries, publishers, technologists, academic administrators, and funders.

To date, extensive work has been accomplished in modeling new forms of scholarly communication. Thus, SCI's strategy was to assemble leading scholars from a variety of disciplines who have made significant and sustained contributions to the articulation of those models, as well as librarians, publishers, technologists, academic administrators, and funders equally committed to forging a path forward. As a group, SCI 8 participants brought a record of imaginative and adventurous approaches to the full spectrum of scholarly production—research and interpretation, publication and dissemination, curation and stewardship, use and reuse. Above all, they had considerable experience in new-model communication and intimate knowledge of the expressive capacities of new technologies in the context of the humanities.

Environment: Trends, Pressure Points, and Opportunities

The emergence of publication models is tightly bound with the environment in which they originate. Scholarly production works through a feedback loop that both responds to environmental forces and shapes them. Participants identified the major factors they perceive as decisive, both in the world at large and within higher education. A summary of their responses to a preconference survey on environmental trends can be found at: http://www.uvasci.org/archive.

Higher education is forcefully affected by a social and economic climate marked by:
- commercially driven technology developments;
- relentless globalization accelerated by technology;
- IP regimes increasingly negligent of the public trust the Founders placed in higher education and libraries, museums and other memory institutions; and
- an economic climate that has produced a major contraction in public-sector investments, especially in the long-term infrastructures that seed innovation and promote knowledge creation.

These influences reverberate in higher education in numerous ways large and small: increased financial pressures in all departments; burgeoning and at times conflicting missions within universities (particularly within straitened public institutions); and greater societal and economic rewards for science, technology, professional, and instrumental knowledge as a whole. SCI 8 participants pointed out that, in contrast to the humanities, basic sciences are well funded, in large part because society has an implicit trust that basic science leads directly to applied science, engineering, and technology, and hence to benefits for society as a whole. Whether that trust is warranted or not, this perception stands in sharp contrast to the public's view of "basic humanities" and the benefits they confer upon citizens. Some humanists insist that this distinction is justifiable because humanistic knowledge does not and should not have instrumental value. Others believe a significant part of the work to be accomplished through new scholarly communication modes is precisely to strengthen the bond between scholarship and the public good. This division was very evident at the Institute. That said, the majority of our participants saw digital technologies as crucial to the humanities precisely because they can open up scholarship to broader audiences. The digital could make the intrinsic value of humanities more visible both within higher education and outside of it.

What is at stake for the humanities was well summarized by Steven Wheatley, vice president of the ACLS, when he referred to our present state as "the best of times and the worst of times." Higher education is suffering economically and politically. Opening up humanities through new production and dissemination technologies is the most promising way to re-engage the public and demonstrate the value of scholarship. Wheatley noted three specific trends with potentially negative effects on humanities scholarship, each of which could be addressed—and turned to humanities' benefit—by deeper engagement with digital technologies and new scholarly communication models now evolving.

The first trend Wheatley noted is the inevitable shrinking of the number of university presses over the next decade, together with a shrinking percentage of long-form/monograph manuscripts that make it through the needle's eye of print-on-paper publications. This problem is exacerbated by the inevitable ratcheting up of standards for hiring, promotion, and tenure in humanities disciplines as a consequence of increasing numbers of applicants relative to available positions. Both of these problems can be addressed by embracing new forms of scholarly publishing and scholarly validation.
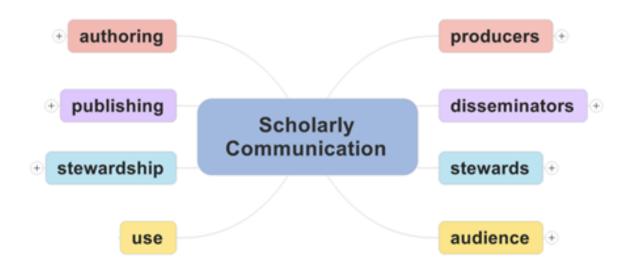
The second trend Wheatley pointed to is the decreasing age of the academic workforce as there are increasing retirements through buyouts and other economic pressures. Senior faculty are being replaced by fewer tenure-track hires. "For those young scholars fortunate enough to win tenure-track positions there will be an ever-longer interval between PhD and tenure-track appointment." And these young scholars will be increasingly either "born digital" or "raised digital." It is critical to create ways to engage scholars who are vital actors in research and education but who are not entering fast-disappearing tenure-track positions, and who may in fact conceive of themselves as "alternative academics." The horizontal vector of scholarly communication enabled by the Web is a powerful conveyor of this kind of engagement, and scholarly societies provide ideal hubs for these alternate scholarly engagements.

The third trend is the ubiquity of mobile computing and app-conditioned delivery that will challenge academic and library practices built around stationary Web-browser based desktop usage. At the same time, university budgets, especially among the public institutions, will be outpaced by the growth of this challenge. This means that higher education must make peace with new techno-business models and even more: they must take advantage of these consumer-and student-friendly trends for educational purposes, or risk being marginalized. We must put our intellectual and cultural resources where our students are, not where we wish them to be. Indeed, the so-called consumerization of computing and communication technologies, seen by some as a threat to the authority of higher education, is perhaps the most promising development of all; for it creates a potential for increased demand for humanities scholarship, with multiple sites for delivery, customization, and re-use.

The more deeply participants reflected on the work they and others have accomplished with new technologies, the greater seemed the likelihood that these new models of communication would indeed extend the reach of humanities scholarship, demonstrate the value of this work for society, and even address some of the economic challenges higher education faces by leveraging economies of scale to enable shared infrastructure. This perception came into sharper focus during an in-depth exploration of the reconstitution, in the digital realm, of familiar modes of scholarly communication, known to us through the tenure-standard models of monograph and journal article.

SCHOLARLY COMMUNICATION: PROCESS AND PEOPLE

Participants looked at scholarly communication as *process* and *people*, using a reference model created for discussion by SCI director [Abby Smith Rumsey](). Rumsey's rough-and-ready reference model was designed to stimulate understanding and cross-community conversation by parsing the process of scholarly communication into elements in play without regard to their specific implementation, analog or digital—the monograph, the blog, the multimedia short-form argument, and so forth.[1]
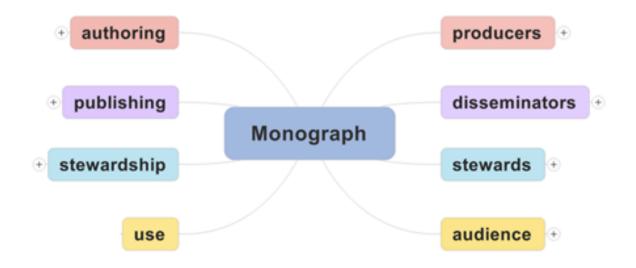

Process

The well-integrated process of scholarly production can be disaggregated into four constituent areas of activity—authorship, dissemination, stewardship, and use. Each has implicit, often unexamined relations and interdependencies embedded in the technologies they use, be it print on paper, moving image on screen, audio on digital playback equipment, or other modalities. It has been widely remarked that the stunning changes wrought in publishing industries by the Internet, particularly by Web 2.0 technologies and behaviors, amount to an unbundling of these four essential activities. All elements are being reworked under the influence of digital technologies: authoring, peer review, publishing and dissemination, supporting business models, even how we read, what we pay attention to, and who our audience may be.

Most senior faculty were acculturated to reference models of the monograph and the journal article during their graduate training, taking for granted the dependencies of these models on existing technologies and enabling
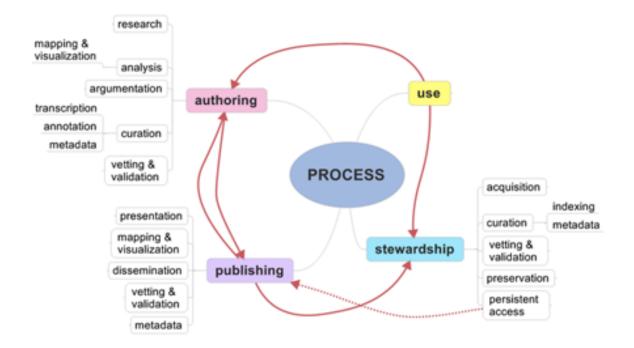
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[1] "A reference model seeks to provide a common semantics that can be used unambiguously across and between different implementations...." See SOAReferenceModel-Generic-rev1_05-03.ppt at: [http://www/oasis-open.org]().

infrastructure (including presses and libraries). These models calibrated their expectations of scholarly communication and career development and generated a community of peers with a shared mental map for scholarly production.

Scholars sitting down to write a monograph, publishers considering the submission of a manuscript, reviewers evaluating it, librarians deciding about acquisition and preservation of the title, and students and faculty reading it—all share a common understanding of markers of excellence and inadequacy.

There is no such shared reference model for digital publications. Digital scholarship is plagued with problems of incomplete, conflicting, or merely absent expectations on the part of all key actors. What does the digital authoring process look like, and how does an author get started? What does peer review of a multimedia long-form manuscript entail? What is an appropriate publishing venue for such a work of scholarship—a monograph, a journal, a website, a podcast? And perhaps most importantly, who is the audience for this work, how are we to read this work, understand its import, and use it in further research? SCI participants reported that the lack of common understandings even for such familiar genres as blogs and websites is still a serious impediment to scholarly production, publishing, library acquisition and stewardship, and recognition and use by peers. The heuristic value of a widely-accepted new reference model would be tremendous at this stage of development. In order to build an appropriate model for digital productions, we looked deeper into the production process to unearth hidden assumptions about value and quality that lie beneath familiar surfaces.
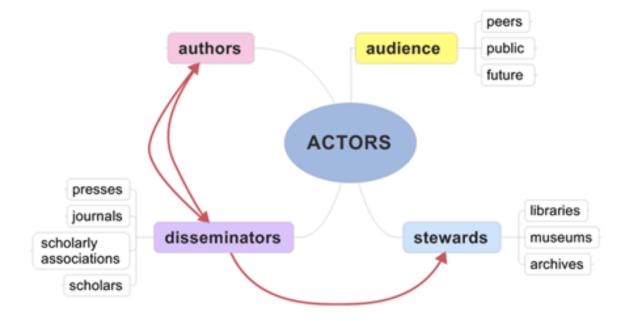
None of these activities are completely distinct from one another. The authoring process incorporates use of sources, just as the review process, formalized in peer review, also exists in acquisition by libraries, use by readers, and citation and footnotes in authoring. In the digital realm, these activities are more intimately intertwined. A brainstorming session by participants enumerated the multiple elements that fall under each rubric. They produced a large and largely overlapping set of activities, so richly detailed that it came perilously close to instantiating what historian Peter Bol called the perfect 1:1 scale map, with absolute correspondence between the abstractions of the map and the reality on the ground.[2] Given the preponderance of scholars in the meeting, the group was able to identify a larger number activities falling under authorship than the other three activities combined. But it seems likely that if a roomful of librarians or publishers, for example, were asked to brainstorm the same map, the list that would swell in the categories of dissemination, stewardship, and use.

People

Communication happens within a community, at the same time it can be said to constitute a community. Given that the nature of community building and sustaining has been so deeply affected by new information technologies, it is hardly surprising that the deepest disruptions to the humanities status quo has been to the constitution of scholarly communities of discourse.

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[2] The full list of constituent elements can be found at : http://tinyurl.com/SCI8Activites.

New-model scholarly communication is enacted by individuals and groups playing multiple and overlapping roles. As recently as 20 years ago, authors were authors, publishers were publishers, and libraries were libraries. They were highly differentiated in professional terms. But this was hardly always the case. When we now behold faculty building their own digital research collections and libraries publishing primary sources online, we are witnessing activities that hearken back to nineteenth-century collecting, critical editing, and facsimile publishing that were themselves spurred by the growth of dissemination in an era of mass production of books.

Authors (also known as *content producers* in the Web environment) serve as their own primary publishers and disseminators, through blogging, website production, annotation of sources, publication of metadata, and so forth. At the same time, given the ephemeral nature of digital resources, producers must also act as the first-order stewards of their own content, choosing formats and standards which are widely supported to create content that is in essence born archival and is thus more likely to persist.

Publishers and disseminators now include not only traditional university presses and scholarly journals, but numerous self-organized communities on the Web that create content and disseminate it and otherwise create markets for it through links. Libraries, archives, and museums are routinely publishing their holdings online. In many cases this amounts to republication or re-issuing content in new formats.

Stewards—those who take responsibility for the transmission of knowledge from one context to another and one generation to another—are most often institutions. But there are and always have been individuals who collect, curate, preserve, and provide access. This stewardship role becomes increasingly significant in the digital environment. The growing numbers of

scholars who are themselves building online collections tend to be aware of the critical choice of formats and standards.

That said, one librarian remarked ruefully that most scholars understand the need for stewardship when it is almost too late to do anything about it. Stewardship rarely succeeds by accident and serendipity. As creators are becoming the critical link between knowledge persistence and loss, it is imperative that scholars work with librarians to create scholarship in born-archival or preservation-friendly formats. In particular, the demands of digital curation and preservation present opportunities for learned societies to collaborate with librarians and technologists to develop guidelines and best practices for creation of preservation-friendly documents and digital objects by their members. Such groups should also engage in promoting legal and economic regimes that encourage rather than impede digital preservation.

Users in the Web 2.0 universe are each and every one potential authors and publishers as well as readers. They are also local stewards, collecting and curating content on their hard drives. And through the mere acts of linking, downloading, citing, tagging, retweeting, and voting on likes and dislikes, they are reviewers. On top of the interactivity inherent in read/write behaviors, use in the digital realm is altered by the dynamic of mobile computing. The consequences for research and learning are profound. So, too, are these effects on the shaping of genres.

Dynamics of Use

Before looking at the online genres that have emerged as favored among humanists, it is important to understand the ways that the new information environment shape the expressive powers of communication technologies and their reception.

Use patterns matter for scholarship in the simplest terms possible: without demand for use of a scholarly resource, it will be challenge to ensure the sustainability of it. At risk is a stable and reliable record of scholarship over time. It is crucial that each scholarly resource find its audience, in the present and over time. (In the case of novel genres such as blogs, it may be more correct to say that they create their own audience.) Part of the so-called crisis in scholarly publishing is a failure in use and the disappearance of audience. There is a serious mismatch between supply and demand in humanities publishing: an oversupply of excellent scholarship in specialized monographs, with little corresponding demand for them. This fundamentally economic problem jeopardizes the humanities. What happens when a scholar is told that her book-length manuscript has been recommended by reviewers for publication, yet was turned downed by publishers because it would "present too much financial risk in the current economy," as happened to Kathleen Fitzpatrick? How do we develop new economies that advance humanities scholarship rather than smother it in the cradle?

While such new economies have important financial aspects, the most important economy is that of increasingly scarce time and attention of scholars

and students. The key to building demand for humanities scholarship must lie in the careful alignment of an author's aims, the ability to find the appropriate audience, and the power to capture and hold their attention.

The aims of scholars—the impetus and goals that move scholars to create— have received the most attention and funding so far in this world of emerging scholarship. Authors will choose one genre over another based on a match between the goals of the scholar and the genre's expressive capacity—the monograph for a long-form argument, a journal article for research results, a blog for speedy publication of work and thinking in-progress.

Far less attention has been paid by scholars to audience, and this holds danger for the humanities. David Brownlee, editor of the Journal of the Society of Architectural Historians, noted "the transformation of the audience is more significant at this point than the transformation of scholarship." Yet the audience figured little in discussions among scholars at SCI, except in the context of pedagogy. However, securing the attention of users is a significant concern among publishers, who articulated a keen understanding of the reader and content user as autonomous, self-directed, and demanding.

The Web's exacting economies of attention suggest that humanists should be thinking more deeply about who their audience is, why their readers should care about what scholars create, and above all, why users should pay attention to this work and not something else. The authoring process must begin with clear aims in the mind of the author, but a scholar's primary concerns should include usability, clarity of presentation, and compelling value to users, as well, for users—be they students or fellow scholars—have scarce time to ration among many competing demands on their attention. To date, scholarly communication has privileged authors over audience, and many scholars carry this presumption of precedence into the digital realm. Extensive tool development, visualization interfaces, and customized, siloed databases are developed with the author's aims in mind first and foremost, not necessarily the reader's ease of use and re-use. As Don Waters of the Mellon Foundation pointed out, scholars make assertions of value to a community when building costly data bases. These assertions can only be tested in use by others. To date, far too little attention has been paid to interoperability and reuse to assess the merit of these claims.

Mind the Gap: Aims, Audience, Attention

Aims

Consideration of significant differences between the current publishing environment and that of 20 years ago can help us discern which genres are likely to work best for humanities scholarship. The first gap between then and now lies in expectations about the final aims and products of scholarly communication. Digital communication favors an ongoing process of research, analysis, and dynamic presentation over a final and fixed product. This favoring of process over product creates a fundamental challenge for the review of new-model scholarship, as well as difficult decisions about which version of a

scholarly work to publish, in the formal sense, and preserve because to some degree, these works are always in flux. Modes of learning are also shifting in favor of dynamic and interactive over fixed and unidirectional broadcast. In the classroom we see the emergence of learning through the performance of research and scholarship, rather than vertical transmission of knowledge from one expert to many students. This dynamic undermines existing structures and cultures of knowledge and authority in humanities; and it poses new challenges to the organizations and funding streams that support them. As several publishers agreed, "digital is central to the future of scholarly publishing" and "the future itself is one of permanent transition."

Audiences

Audiences, too, have radically shifted. A digital content user expects to be active, not passive. Moreover, communities of users are more often open and self-organizing than closed and self-replicating. Most SCI participants welcome these changes in audience behaviors and expectations; they see the openness of new audiences as crucial for building wider constituencies for the humanities. Yet there is a conundrum: establishing expertise and building a career in higher education still follows a vertical path upwards. The academic audience so far remains a self-replicating circle of fellow scholars whose training seeds only incremental variations from generation to generation. Even among scholars who identify themselves as digital humanists, much scholarly work is by necessity specialized and grounded in a vast corpus of expert knowledge. The general desire of digital humanists may be to expand the reach of this expert knowledge beyond a closed community of scholars, but they are not often themselves public scholars. Inevitably when an author aims to appeal to several audiences with differing expectations at the same time, it becomes harder to hit any mark, let alone the all of them. Which audience will take precedence—fellow specialists or the general public? Or if that dichotomy is itself a false distinction in the digital environment—as seems likely—what does it mean for scholarly communication?

Attention

Not only are the nature and composition of audiences changing, but so too are the means by which their attention is captured. Scholars know how to achieve impact among peers in traditional scholarly communication modes, just as they know how to measure that impact; each discipline has well-defined protocols and metrics for measuring scholarly success. But in the digital environment, they must capture people's attention in an environment in which there is aggressive competition for attention on the Web. We know we need to capture our students' attention in motion, not just in the classroom. And other scholars are equally subject to competing demands on their time and attention. Above all, the new information environment privileges the reader, not the author.

Publishers and librarians are aware of these fundamental challenges to their enterprise. This gives them a potentially powerful role to play in effective scholarly communication. As a rule, publishers and librarians place much greater emphasis on readers as autonomous beings rather than as extensions

of scholars and their interests; they know the choice of content delivery time, place, and mode now rests firmly in the hands (and hand-held devices) of the readers. Norm Hirschy, editor of music books at [Oxford University Press](), provocatively asked if humanities scholars are ready to see their audience not as *readers of books*, but as *users of content*. For the new audience expects not only to read, but to listen, to look, to download and re-use. Editors also noted the contradictory expectations of scholars they see: in the author mode, they expect traditional publishing forms for their manuscripts; in the reader/user mode, they expect content to be accessible online, easily searched, and repurposable when possible.

Genres

SCI scholars are working with a rich palette of new technologies, new forms, new collaborators, and new audiences. Their work ranges from sustained experiments in participatory knowledge creation to database building, curation of both digitized and born digital resources, editing and re-issuing of performances, experiments in open access and open peer review, development of algorithms and other forms of machine-reading practices to aid in research, production, and review, deep collaboration among archives, scholars, programmers, presses, and other actors. Taken together, these projects include major trends now visible in the digital domain. Most crucially, each of these efforts undergo multiple stages of design and development, implementation, assessment and redesign, and various attempts at persistence and stewardship. Homing in on four significant and distinct areas of activity, participants synthesized what they had learned from their experiences, with particular attention to the factors of aims, audience, and attention explored above. These four areas of activity were:
1. digital collection building;
2. scholarly blogging and informal communication;
3. multimedia argumentation; and
4. sound studies.

The first two areas have been in lively and often well-funded development for a decade or more. The third and fourth areas are less well worked through, though they stand to gain the greatest advantage from multimedia affordances. In each genre, scholarly production in digital media raises fundamental issues about scholarship in non-textual media.

Collection Building

Scholar-driven digital collection building typically originates in the need to prepare data for use in a digital research environment—either born-digital data or digitized analog sources. Steven Wheatley characterized research as the creation and curation of knowledge, that is, the effort taken to make data and digital objects useful, discoverable, sustainable and authentic. In the print-on-paper environment, the curation of many research resources, such as manuscripts, books, musical scores, and maps, has been undertaken by highly skilled archivists, librarians, and publishers. Scholars in previous decades have been so alienated from this basic practice of research—the preparation of

humanities resources for scholarship—that many of them coming to a digital environment are not able to recognize it is a core scholarly activity. This is a symptomatic disjunction between traditional scholarly communication models and new ones. On the one hand this disjunction is responsible for much of the agonizing lack of recognition and valuation by peers of editing and collection building. On the other hand, reconnecting with curation and editing in the digital environment often engenders profound intellectual rewards for scholars and great stimulation and learning for students. The gap will be closed over time, but accelerating the pace of closure is important both for the generation of scholars about to enter the academic market and for the undergraduates who pass through college on their way to their careers in the next information-rich decade.

The never-ending cascade of decisions made during collection building has the benefit of forcing scholars to engage core disciplinary issues. Faculty who build collections seldom do it for the sole end of collection building; it is the by-product of an interpretive project, and the database serves as the primary site of interpretation. Decisions about such things as metadata schema, mark-up, annotation tools, and presentation design are part and parcel of interpretation.

But to the extent that they are part of a scholar's interpretation, these divisions can constrain re-use by others by precluding certain other paths through the same data. There is an intractable tension between the generalized and customized, between working for audiences narrow or large, between cross-disciplinary synthesis and hermeneutic interpretation, between building highly specialized, targeted resources, metadata schemes, and siloed repositories and the fecundity inherent in common metadata schemes, interoperable data bases, and platforms. These tensions will never be resolved, for they originate among the differing aims of scholarship and thread their way through every stage of scholarly production, dissemination, stewardship, and use. Hence the weight given to open vs. closed, generalized vs. specialized will vary in each circumstance.

But these decisions can become path-dependent: choosing one option precludes the choice of others now and in the future. Some SCI 8 participants deeply involved in collection building expressed concern that the way their collections were described and arranged within a database were so intimately tied to their interpretive intent that the effort involved in repurposing them meant that they were often abandoned after a project was over. When interoperability is lost, data are orphaned. This risk poses significant economic challenges to administrators and funders, regardless of the excellence of the scholarship. Shared information infrastructures, whether purpose built for academic purposes or enabled through use of cloud computing and commercial systems, are capable of leveraging economies of scale. This leveraging will make highly specialized humanities scholarship feasible and sustainable.

The scope of expertise and labor required by collection building and curation has significant implications for modes of scholarly work. Collaboration is favored over individual effort. It also presents new demands on underlying infrastructure. Speaking from a university-wide perspective, vice president and

CIO of the University of Virginia [James Hilton](#) argued that the only way universities can afford the scale necessary to support their research and teaching mandates is by starting now to build a small number of well-integrated networks of sizable storage and repository efforts. How scholars choose to work within cross-institutional networks will be influenced by discipline-specific needs. Scholarly societies are well positioned to intervene here—not as the primary repositories themselves, but as a bridge between a discipline's broad-gauge needs and the shared cyberinfrastructure that will serve as the backbone of scholarship and teaching in the twenty-first century. Whether societies are aware of this need or willing to address it is as yet unknown.

Scholarly Blogs and Informal Communication

Blogs are often referred to as the gateway drug to other uses and modes of multimedia scholarship that engage new audiences. Blogs have been primary sites of the disintermediation of expertise and the reconstitution of new peer groups. Blogs are an efficient and inexpensive way to circumvent the needle's eye of scholarly publishing, accelerate the speed of communication and reaction, and make visible and accessible scholarly collaborations.

The ease of publishing to the Web, though, exacerbates the abundance of resources competing for readers' finite time. When so much content is so readily available, how do readers distinguish what is worthy of attention from what is mere distraction? This apparent problem of abundance can be misleading, though, because every blogging community constitutes itself and sets the parameters of both content and participation. Within higher education, for example, there are several social science disciplines with high prestige scholarly blogs serving as important generators of first-rate scholarship. The number of contributors within such communities can be held to a natural number. To do so means invoking measures of exclusion, a necessary act in the pursuit of excellence.

In a simple sense, blogs grounded in a community of scholars are simply engaging in another kind of peer-reviewed discourse. The relationship between this informal kind of peer review and more formal markers of peer review is unclear at present. But the efficacy of blogs to engender and sustain conversations is so great that often they are pointed to as integral to the creation of knowledge and therefore merit some kind of crediting. Perhaps there should be different units of micro-credit depending on the type of contribution, from curating content to sustaining the social network to editing and managing the entire communication enterprise of a collaborative scholarly blogging operation.

Publishers noted a potential role for themselves here in taking snapshots of content for curation and helping bloggers build and sustain communities of discourse. Libraries can archive those blogs deemed by the community as having long-term value.

Multimedia Argument

There are two models of multimedia argument: in one, argument is carried by prose and punctuated by media as illustration; in the other, the medium itself bears the burden both of presentation and argumentation. A fundamental question arises: is linearity essential for argument? Some asserted that humanists tend to fetishize linearity, and that in truth, even the most seemingly linear form—the book-length textual argument—is replete with recursions, ellipses, analogies, and allusions, each of which pushes against the linear. Monographs are structured like trees, with a long central line or trunk from which many branches lead off and from there, ever smaller branches are spawned. Perhaps we are so familiar with the monograph form that we no longer notice that few scholars read long-form arguments from the first page to last, in that order. Rather, they move in well-worn paths that run between introductory, reference, citation, and index materials, all centering around the core narrative presentation.

The challenge of working deep within a medium begins with basic technical proficiency and literacy skills in that medium. Direct presentation of evidence that is time-based and experiential means that authors will need to be explicit about what they intend the evidence to do for the argument. It also requires the scholar to clarify for the reader choices made in evidence selection and presentation. Many argue the scholar's role is to create an argument-in-media and build pathways through the content, giving explicit justifications for the selection, presentation, and paths the reader will traverse.

How does this affect the long form? The virtue of the long form is supposed to be that it shows mastery and originality. This is certainly possible to achieve through multimedia. We still expect to see parsimonious argumentation as the leading indicator of mastery and originality (this is where editors can help). This is the specific problems that the Networking Visual Culture group is addressing in collaboration with MIT Press in the development of Alex Juhasz's argument in YouTube format.[3] The very nature of authorship changes: in addition to the scholar, is it the media personnel—photographer, videographer, editor, designer—who have claims to authorship. For in addition to the effect of that multimedia may have on argumentation, some SCI 8 participants argued, they also profoundly change both the nature of authorship and the way an audience encounters that argument. Again, more work has been focused on addressing multimedia in the authoring process, and thus more attention should be paid to the audience and its reception of multimedia argument.

Sound Studies

Scholars and publishers actively engaged in sound studies focused on the nature of the *strong illustration*—the incorporation of sound and image directly

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[3] For the Animating Archives meeting, see
http://www.brown.edu/Conference/animating/index.html

into a text-based argument. This is a topic fraught with theoretical, practical, technical, and legal issues that need clarification before sound studies can mature and fully realize its potential. Interpretation and curation of sound resources rely on accurate, authentic representation of a source that is embedded—at times imprisoned—on fast changing media that are themselves bound up by convoluted rights considerations. None of these issues is transparent. Yet they cannot be avoided in mounting an argument in sound and about sound. They must be made explicit to the audience.

The use of language in a sound argument to present a theoretical stance and interpretation can be relatively straightforward. But it should be accompanied by a clear exposition of the practice—the specific choices the author made in the technical aspects of the aural representation—as well as the theory that undergirds an interpretation. Scholars suggested that a research note about the audio technology of recording and playback thus should accompany the interpretation. William Whittington demonstrates through his work on sound design in film that a book embedded with clips creates something novel, demanding users to navigate through sound and moving image as well as words. It thus thrusts them into a temporally dynamic interpretive space distinct from purely textual spaces or synchronic visual environments.

Given the imperative to quote sound, authors insist that they must be able to use audio clips under the rubric of fair use. The uncertainty about how to do that has led to an avoidance of aural citation in too many cases. This has in turn created an interesting deformation of sound studies genres—which SCI participants learned is known as the *drive-by disco* phenomenon in cinema. As Whittington pointed out, there is a long standing practice in filmmaking of substituting a generic clip of music such as disco in scenes where a copyrighted work plays in the background (e.g., a convertible driving by with the Beatles blaring from the sound system). Oxford University Press uses several approaches to this citation challenge, from making clips available on websites they control, to encouraging authors to link to other sites such as YouTube. When it comes to the persistence of links to sources that are not controlled by the author or publisher, such as YouTube, MediaCommons encourages authors to push the fair use envelope by linking to the site and scraping the content, backing it up, and using the stored version when necessary.

ADOPTION OF NEW GENRES IN EXISTING ACADEMIC STRUCTURES

These new-model genres not strictly speaking *emerging*, because they have already emerged. But they are in their infancy and each faces their own developmental challenges. Their evolution will continue to be shaped by rapidly morphing information technologies, by new cohorts of users, and above all by the communities that nurture and sustain them. Two factors that will advance adoption are already firmly in place.

Interdisciplinarity: Touted for its value to scholarship, interdisciplinarity is clearly encouraged by the use of keyword searching, the growing reliance on cross-disciplinary databases such as JSTOR, and proliferation of extra-disciplinary humanities centers across the country and abroad. That said, the

consensus at SCI was that the all-important recognition and reward system that controls the scholarly labor market remains firmly within departments locally and learned societies nationally. Neither of these two centers of prestige and recognition have yet embraced new modes of scholarly communication to advance humanities scholarship. Developing more explicit models of the scholarship within these new modes of communication would greatly advance their understanding and recognition among departments and societies. Humanities centers, whether they are digitally inflected or not, can also play a central role in developing and socializing these new models of communication.

Publishing to the Web: Shrinking resources for publishing both long- and short-form work has led some to elide presses and journals altogether and publish directly to the Web. Media studies scholar Kathleen Fitzpatrick has developed a very robust model for this direct-to-Web solution to an economic barrier. As it is, many—quite possibly a majority—of faculty currently publish directly to their students on the Web by posting course materials on their Web sites; others are putting videos on YouTube. Significantly fewer publish for their peers this way. How long will that disconnect last? If scholars were to take stock of exactly how much direct-to-Web publishing they already do (including the venerable listserv), they might surprise themselves at the volume of their digital publishing. If they were to go one step further to examine why they chose those particular digital modes over print-based scholarly communication, they would begin to understand in finer detail the affordances of digital dissemination and perhaps think more deeply about its implications for creating new knowledge.

Architectural historian Dianne Harris noted that good technologies are very persuasive. They sell themselves. She is now able to represent the built environment in two- and three-dimensional digital modes, something especially compelling in undergraduate education. "Once you do that, there's no going back. It has become indispensable for our work." Indeed, once new information technologies become indispensable to research and teaching, they will become core to the humanities and be recognized—and rewarded—as such.

The question remaining is how these genres and their users will develop and be normalized within existing academic structures, beyond attestations and proselytizing. To address this question, we looked at mechanisms available to the three professions most responsible for scholarly communication: the professoriate, publishers, and librarians.

Professors and Peer Review

Dan Cohen remarked that communities come first and the growth of new-model genres second. Among scholars, this means the peer review system must fully integrate scholarship based on new technologies, understanding the intellectual merits of the work done, developing appropriate metrics for measuring the excellence of that scholarship, and creating and refining old mechanisms for recognition and reward.

As we noted when looking at the map of the scholarly communication process itself, review, validation, and judgment take place in each of the four quadrants

of the map. During authoring phases, scholars frequently ask for informal reviews by respected peers. In the publication process review happens through formal channels in the course of accepting or rejecting a publication. As stewards and collection builders, librarians assess the value of titles for their faculty and student body when acquiring or declining to acquire them for publication. Ultimately, the readers have the last and irrefutable word in the matter. They either read and recommend a work, or they put it down and pan it.

While each of these stages is implicit and often occurs behind closed doors in the print model, all of them have become transparent and accessible for remodeling in the digital. New models have prototyped open access (Kathleen Fitzpatrick's Planned Obsolescence) and open peer review (such as the *Shakespeare Quarterly's* issue on Shakespeare and New Media guest edited by Katherine Rowe). These pilots force open wide the usually gated access regimes of the humanities and the protected review process conducted by journals and university presses. Another experiment in review is being conducted by Dan Cohen through *Digital Humanities Now* (DH Now), a project that leverages linking to discern what merits people's attention. This is a real-time experiment in building community and audience, letting the content that is of greatest interest to this self-organizing group rise to top visibility as a sort of collective, passively edited editors' choice.

The weaknesses in these open experiments are there for all to behold—they are, after all, open. Leaders of the projects pointed to a tendency to create echo chambers, for example, and to reify existing groups of like-minded folks that create in-groups and outsiders. But such flaws are hardly unique to these communities. They are simply more visible. (Such features also abound in the walled gardens of blind review systems currently in place and may be less subject to correction.) In addition to the openness that is a core ethic of the humanities, alternative approaches offer the ability to surface the unlikely, the unusual, the often underrepresented. Open review has its trade-offs: it is quite labor-intensive. But those engaged in the exercise claim that it garners better feedback for authors and expands the variety of expertise in the process as well as recruits a broader readership.

The essence of review is to recognize and reward impact by discriminating between what is excellent and what is merely good. SCI participants were sharply divided in deciding precisely how these judgments should be made and by whom. Some argue that larger pools of reviewers or the presence of named reviewers create a harmful group-think effect. Dangers include a tendency to rule out innovators, outliers, and dissenters in favor of what is acceptable to all or simply in vogue. Sometimes it is the smaller groups of scholars are freer to reward what is innovative rather than what is popular.

Participants debated the ideal relationship between reviews that are aimed at certification—those for making publication or tenure and promotion decisions—and those aimed at development, designed to help improve work. It is precisely in the relationship between certification and development that we find the nexus where reward is brokered in higher education. For review can define

community standards of scholarship, rule on who can and cannot participate in the creation of it, and decide for whom it is being created.

Whether participants came down on the side of communities in higher education being open and self-organizing or closed and self-replicating, all agreed that there are some practical problems inhibiting peer acceptance of excellent digital scholarship. These can and must be addressed in the short term.

Short-term Problems and Opportunities

The first is the difficulty of selling core scholarly activities of digital scholarship—tool development, database and collection building, markup, editing, multimedia argumentation—to peers themselves not immersed in these activities. The remedies for that can be simple, though time-consuming. Authors need to be aggressively transparent in articulating where the scholarship in these activities lies, what are the assumptions upon which they are building their tools, editing sources, and performing other research and presentation activities. In addition, peers need to be taught how to assess digital and methodological work. Scholarly societies are ideal sites for this kind of training, as the Modern Language Association has demonstrated in its annual digital scholarship review workshops.[4]

There is also the laborious but absolutely necessary work of reengineering systems of credit. Cohen rued that "it is easier to rely on hand-me-down heuristics than to build a new evaluation system." Yet it is the critical next step. Some participants bemoaned that fact many universities reward research over teaching and service. There is no reason this fact would disadvantage digital scholarship per se. On the contrary, if research truly is the creation and curation of knowledge, as Wheatley said, then in principle each act of digital creation and each act of digital curation requires review and hence merits some measure of credit. The question then is one of what kind of credit and how much. Moreover, acknowledgement of the collaborative nature of new-model scholarship is necessary and systems of micro-crediting for this kind of work should be worked out within the context of the discipline, ideally under the auspices of a learned society.

Finally, and most practically, new crediting systems are necessary for peer review itself to survive in an era of increased time pressures on all members of the academic community. For it is the labor of reviewers, not just those reviewed, upon which the fate of the review system rests. Anyone wondering how much more severe the pressures of peer review can become need only look at their colleagues in the scientific departments on campus. In these fields, the rate of publication is so high that peer review is widely recognized to be in peril. As of December 2009, the fields of biology published two new papers every

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[4] Modern Language Association, *Evaluating Digital Work for Tenure and Promotion: A Workshop for Evaluators and Candidates.* See: http://www.mla.org/resources/documents/rep_it/dig_eval.

minute. In all scientific fields, there were five new papers published every minute.[5] This places extraordinary stress on the reviewers and, not incidentally, the readers of scientific literature—that is, on scientists themselves.

The Pivotal Roles of Publishers

Maria Bonn, associate university librarian for publishing at the University of Michigan, said the role of publishers is to bring scholars to a point where their work can connect with the public. This role has great potential for growth. Publishers' perspectives on how to move forward introduced a disciplined and pragmatic way to look at the issues under discussion. First, the editors and press directors present pointed out the lamentable disconnect between what this group of SCI participants are doing and what comes across their desk on a typical work day. Far and away the majority of scholars young and old bring to them traditional monograph and journal article manuscripts. Even when urged by editors to include digital media, typical humanities authors tend to add media-based illustrations in the traditional sense, as an afterthought. They simply do not understand or are not well supported in the digital authoring process. This argues for the creation of a set of digital authoring templates available to scholars at the beginning a research project. A template would outline a given process of authoring with new media, summarize the choices between various digital genres and technologies, articulate best practices for reference and citation and for the creation of a manuscript, digital artifact, or interpretive expression in preservation-friendly formats. Such templates do not exist or have not reached wide audiences. Development of them could be undertaken in collaboration with a group of presses and a scholarly society (say, its research division or an ad hoc group). This could result in the production of a digital methods handbook for historians, a handbook for sound studies, one for architectural historians, and so forth.

Templates alone will not close the gap between the possibilities of new media authorship and the reality of what comes to publishers. Alan Harvey of Stanford University Press noted that any change in publishing models needs to begin with changes in undergraduate curricula and be reinforced throughout graduate school. At present, students in college and graduate school are still instructed in how to achieve reading and writing proficiency primarily in print genres.

Looking at their own in-house practices, publishers identified the need to rethink and rework contracts in light of multiple authorship, changes in content and presentation over time, and the demands of users to download and re-use content. When and how peer review happens also needs to be rethought. Digital publishing raises issues of version control, something publishers argued still matters for reference, citation, and archival purposes. The whole model of publication might be reimagined as a core and relatively fixed body of content that has a dynamic community of discourse around it—readers, reviewers, and

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[5] Doug Kell, Chief Executive of Biotechnology and Biological Sciences Research Council in the UK. See: http://www.netvibes.com/idcc2009#Completed_Sessions.

authors adding to the original work. That kind of work necessitates new contracts with authors, new in-house development processes, and possibly new relations with content repositories for scholarship that is aimed at using and presenting archival content in new and often interactive modes.

Above all, new-model publishing requires a cadre of professionals with new skills and expertise. They need new ways to develop content and create compelling rhetorical strategies ("no gratuitous rich media, please" as one publisher implored), to copy edit and market content, and to gauge success. There are fellowships to support the development of digital scholars and also digital librarians.[6] Regrettably, there are no such developmental funds or programs for the nurturing of new-model editors, marketers, and directors so essential for a healthy ecosystem of new-model publishing.

The Long-term Value of Libraries

Libraries have been in the forefront of building cyberinfrastructure for humanities and social sciences. From digitization of primary sources and experiments in developing institutional repositories, to supporting open access publishing models and building laboratory space for research and teaching, libraries have provided services to scholars throughout the process of scholarly communication. Now they are drawing postdoctoral scholars and so-called alternative academics into building new library services such as digital humanities laboratories (the Scholars' Lab at UVa) and innovative publishing programs (at the University of Michigan Library). [7] SCI participants viewed libraries as critical in furthering humanities scholarship in two seemingly contradictory ways: first, as trusted conservator and long-term steward of humanities scholarship; and second, as a force for innovation and a neutral meeting ground of people from different disciplines and professions to collaborate and experiment.

Just as humanities departments nationwide are producing more humanists with advanced degrees at a time when there are shrinking professorial opportunities, libraries are actively developing career paths for such alternate academics. Even so, libraries face the same problem as publishers: a lack of professionals skilled in the implementation of new-model scholarly communication. How can higher education as a whole redress this crisis in resource allocation, when it continues to produce bumper crops of graduate students in fields which themselves are not hiring, and fails to create clear alternative paths for these professionals to move into library, press, and digital humanities center work?

While active collaborations in the creation and dissemination of scholarship are taking hold within research libraries across the country, the mission that is

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[6] For CLIR Postdoctoral Fellowships, see http://www.clir.org/fellowships/postdoc/postdoc.html. For ACLS Digital Innovations Program, see http://www.acls.org/programs/digital/.
[7] Bethany Nowviskie, http://nowviskie.org/editing/alt-ac/ and http://chronicle.com/blogPost/the-alt-ac/26539.

core to these libraries—the work of preserving a continuous body of knowledge from generation to generation—has become more critical than before. Yet while preservation and stewardship have already emerged as the critical functions of libraries in the digital age, the need to support a still growing, physically fragile, and expensive print collection continues. It competes head-to-head with an urgent need to build a scalable and durable digital infrastructure as both investments draw on a shrinking resource base. There is only one way to expand this base: to pool resources among universities for a shared infrastructure of a scale that far exceeds the one-campus-one-library model that print publishing has instantiated.

New-model scholarship needs to address important technical and intellectual questions to succeed. But success will ultimately rest upon how well the entire enterprise is socialized within higher education. Libraries are developing new models of stewardship based on a shared infrastructure, and this requires a new social model of cooperative and inter-dependent collaboration among different research libraries, rather than the ingrained model of competing library to library, campus to campus, like rival football teams.

NEXT STEPS

David Brownlee pointed out that "humanities scholarship *is* what humanities scholars *do*." This statement is not only a call to action, but also a reminder that humanities scholarship has an unusually large scope of action, free to engage in compelling new areas of inquiry. And it is not solely scholars who determine the shape and fate of humanities scholarship. While the genres that SCI participants explored have many diverse features, they all emerge from communities that are not constituted exclusively by scholars. On the contrary, these communities include librarians and technologists, publishers and scholarly societies, higher education administrators, and above all, users in the classroom and on the go. Each of these communities needs to be actively engaged in the next stages of humanities development.

Participants identified three urgent needs facing the humanities:

1. *demonstrate value* by creating high quality scholarship and making it readily available to communities within and outside of the walled gardens of higher education;

2. *accelerate the pace of development* by disseminating scholarship in early stage and in-process versions that get into the hands of users quickly;

3. *build to scale* at the institutional level by pooling resources towards higher education infrastructure to achieve economies of scale; and at the individual level, by taking advantage of consumer technologies and push-pull technologies of customization to deliver scholarship to users in multiple venues of their choice.

SCI participants developed a rich menu of near-term actions to address these needs, summarized below.

Focus on Audience

The ultimate measure of successful scholarship is impact. Digital technology provides low-cost and far-reaching delivery of scholarship to peers, students, and an interested public. These resources must find users in each and every generation to be sustainable over time. Much innovation in the digital humanities has been around core disciplinary research problems, collection development, and tool building. Now it is time to focus more on maximizing use and impact of digital resources, expressions, and methods among peers, students, and the public.

Educate Tomorrow's Scholars, Professionals, and Public

Communicating the importance of the dialog between the past, present, and future to students and the public is key to creating demand for humanities scholarship. Therefore we need to ensure that our students and the public—not to mention our peers—are equipped with the media literacies necessary to learn and communicate effectively in the current information age. We need to focus on undergraduate education and teach digital literacies through curricula closely aligned with the real needs of present and future students and scholars. Engaging graduate and undergraduate students in the development of new scholarly genres is a compelling way to develop such literacies. Learning key technical skills applicable to a given field—be they in geospatial or textual analysis, information architecture, programming and design, or the development of data and metadata encoding schemes—is most effectively achieved in the course of doing scholarship itself.

Develop and Test New Models

New models of scholarly production and dissemination should be developed and tested in the classroom, in collaboration with presses and libraries, and in open Web communities. At this stage of development, multiple models should be developed and put into the hands of scholars; each disciplinary community needs the opportunity to try new models and judge their value for themselves. When accepted and adopted, these models will require the development of new assessment and credentialing protocols. They should take into account contributions to scholarship at all scales, from long-form argument to critical and multimedia editing, as well as the multiple contributions made in collaborative scholarship.

Learned societies should take leading roles in sponsoring the development and testing of such models, including protocols for review of digital scholarship, society-sponsored "editor's choices" of models for best practices, topic-focused blogs, featured podcasts on important disciplinary trends and issues, and engagement of graduate students and junior scholars in developing online member services. Some societies (e. g., Society of Architectural Historians, Modern Language Association) provide important models to follow, having committed to developing and testing new forms of publication, assessment of scholarship, and society-based community engagement.

New professions also need to be modeled. In addition to the development of alternative academic careers for scholars, there is a need to develop new venues for acquiring professional skills and forging attractive career paths for librarians and publishers.

Leverage Existing Resources and Infrastructure

Because of the increasing scale of higher education infrastructure required by any single institution, cyberinfrastructure should be developed as a community resource, not a campus-based resource. The backend of scholarship—constituting presses, centers, and libraries—needs be built upon interoperable systems that include publishing platforms, digital repositories, and shared development of standards and best practices. Interoperability means building locally to fit a common set of open APIs rather than building within a siloed central working environment in the one campus-one library model.

Reduce Intellectual Property Constraints

Few things present themselves as unmovable objects in the path of the irresistible force of mass migration of scholarship onto the Web and into the hands of students and the public. Intellectual property is a formidable barrier, however. SCI participants who deal with these matters on daily basis—university administrators, legal counsel, and publishers—urged scholars to assert their fair use rights aggressively. Avoid asking permission, especially of risk-averse university counsel. Focus instead on small-scale and significant actions, such as committing to a publishing contract that promotes open access and re-use. Both publishers and scholarly societies must also throw weight behind fair use.[8]

Step Up the Pace

The new publishing ecosystem operates at an accelerated pace; change has become a way of being. Whatever we do in the present must be conceived as adaptable and responsive to changing conditions. As Scott Morris of Apple, Inc. said, we would do well to develop and test several different models, starting with 1.0 versions that get into the hands of users quickly, perfecting our design of these models over time. Further, the best way to reach our intended audiences is to plant our scholarship "in the same ecosystem as other content," and enable flexible use and remediation through open standards.

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[8] For the CAA statement on fair use education, see http://www.ninch.org/issues/copyright/FAIR_USE_EDUCATION/FAIR_USE_EDUCATION.html. For the Society for Cinema and Media Studies statement of fair use in multimedia scholarly publishing, see http://www.cmstudies.org/index.php?option=com_content&task=view&id=8&Itemid=1.

Change the Climate of Opinion

A key component of stepping up the pace of development and engaging more people in testing and modeling new forms of scholarly communication is to hold a mirror up to scholars to reflect what they are actually doing. Much of the conservative academic rhetoric that surrounds the digital scholarship masks significant *de facto* digital publishing. Therefore, we need to engage our colleagues in reflection and assessment about current practices. This is likely to have more influence than exhortations. A good way to measure how far we have come would be to revisit the influential report published by the American Council of Learned Societies, Our Cultural Commonwealth. Within the space of just five years since publication, much of what the report authors identified as *desirable and possible* has come into being. Looking at what has been accomplished and the impact of those accomplishments will further socialize new practices and behaviors, highlighting the ways that scholars move from digital evidence to digital publication.

Conclusion

The scholarly communication system currently in place evolved in response to what scholars aspired to do and what available technologies made possible. The same dynamic is in play today. And just as the first wave of print-based scholarship created new forms of publishing and new audiences, so, too, will new digital genres arise together with new audiences for these forms. This long view of scholarly communication as a continuum of evolving forms and audiences highlights one more critical fact: the system we are building today is one that will be inherited by the next generation of scholars, currently enrolled as undergraduates and graduate students. We need to act now to ensure that the humanities deeply engage these students. If they continue through school alienated or indifferent to the humanities because we failed to make humanities scholarship accessible, they will carry that alienation and indifference with them over the course of their lives. At stake is not just contemporary scholarship and the well-being of humanities professionals. At stake is the role that humanistic learning and knowledge will play in the daily lives of our students and the citizens they grow up to be.

**SCHOLARLY COMMUNICATION INSTITUTE 8:
EMERGING GENRES IN SCHOLARLY COMMUNICATION**

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SCHOLARLY COMMUNICATION INSTITUTE 9

New-Model Scholarly Communication:
Road Map for Change

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INTRODUCTION AND MEETING SUMMARY

The Scholarly Communication Institute 9 (SCI 9) convened scholars, librarians, publishers, higher education administrators, and funders to develop collaborative strategies that will advance humanities scholarship in and for the digital age. SCI participants explored the impact of trends within and beyond the rapidly evolving landscape of higher education on scholarly production and communication, from producing and publishing to assessing, curating, and using. They examined the new roles and responsibilities assumed by the major actors in scholarly communication. They proposed actions to create sustainable infrastructure built on shared capacities and addressing shared needs. And they identified the people and organizations that are best positioned to play leadership roles in modeling, validating, and sustaining new-model scholarly communication.

This report synthesizes discussions among participants at the ninth and last session of the Scholarly Communication Institute at the University of Virginia. This culminating institute built upon insights gleaned over nearly a decade of meetings and programs sponsored by SCI that were designed to model and test new approaches to humanities scholarship. Each institute focused on distinctive aspects of new communication strategies and modes of working as they refashion humanities inquiry within disciplines (practical ethics, architectural history); through the use of new technologies (visual and geospatial technologies); in sites of innovation and experimentation (humanities centers); and, at SCI 8, in emerging genres of discourse that take advantage of digital affordances. This final session took an integrated look at how multiple

actors in the landscape can interact and collaborate to accelerate desirable change across the scholarly communication system as a whole.

What is *new-model scholarly communication*? By scholarly communication we mean the authoring, publishing, stewardship, and use of scholarship. *Digital scholarship* is the use of digital evidence and method, digital authoring, digital publishing, digital curation and preservation, and digital use and reuse of scholarship. And *new-model scholarly communication* is what results when we put those digital practices into the processes of production, publishing, curation, and use of scholarship. The goals of scholarly production remain intact, but fundamental operational changes and epistemological challenges generate new possibilities for analysis, presentation, and reach into new audiences. The changes also pose serious challenges to existing organizations, professions, and business models. These developments are unfolding in an era of radical public-sector defunding across higher education, the erosion of tenure-track career paths, profound organizational disruptions in scholarly associations, libraries, archives, and museums, and the break-down of print-based publishing business models.

Advancing the humanities in and for the digital age demands the active engagement of many sectors of the scholarly community working towards a shared vision. The key actors in the successful transition of humanities to a digital environment are:

- Peer communities of scholars able to assess and validate new forms of scholarship, including genres that cross disciplinary boundaries, reach new audiences, and use technology in innovative ways
- Publishers able to support new communities of discourse producing scholarship in multiple media and genres, and engaging the attention of diverse audiences
- Libraries that can support use of sources in all formats and ensure the integrity and long-term accessibility of the scholarly record
- Administrators who enable realignment of resources to where they are needed and support changes in the reward system of scholarship
- Funders who seed innovation through projects designed to model and test new modes of working, new methodologies, and new career paths for the many professionals involved in scholarship.

Participants pointed to evolving practices and mindsets that take advantage of digital affordances to push humanistic inquiry into new territories. They homed in on a set of collective priorities and specific venues to serve as common ground for aligning interests and resources. They proposed a series of actionable ideas, detailed in the following report, in five areas:

Develop a shared mental map for scholarly production and communication in the digital age. Improve and normalize the processes and workflows of digital scholarly production and authoring; and connect with and sustain new (and larger) audiences in addition to peer disciplinary audiences

Reengineer the system of credit. Explore and articulate criteria for assessing scholarly merit in the online environment; experiment with venues for peer review to increase transparency, reliability, and participation; devise methods to sift through the surfeit of available information and direct scholarly attention to meritorious work; and realign reward and recognition systems to apportion credit where credit is due

Nurture new career tracks and provide better professional development. Define new career tracks; provide education and training for new skills and literacies as part of graduate education and throughout the working life of humanities professionals

Better align shared capacities to attain sustainability throughout the lifecycle of digital scholarship. Scholarly societies should reconceive the core services they offer to their disciplines and members; publishers, libraries, and museums need to develop new business models that meet the aspirations of open access to content; and libraries and museums should retool their investment and policies to ensure the continuity of their stewardship responsibilities while scaling up for significantly greater curation and preservation roles in the digital age

Engage new sources of support and funding for the humanities. Target strategic areas for funding, such as building consortial models, stimulating experimentation, and supporting professionals at critical transitional phases in their development.

NEXT STEPS

Digital practices are remaking and redefining humanities in and for the digital age. As the humanities migrates with the society it studies and serves into online communities, scholarly communication professionals will be far better positioned to pioneer digital practices that simultaneously create and demonstrate value to society.

The following is a summary list of recommended near-term actions and the actors taking leadership roles in implementing them. The full report that follows provides rationale, context, and details. The professions that are responsible are listed in brief, and should be understood to include both individual organizations such as scholarly societies, and umbrella organizations such as the American Council of Learned Societies (ACLS), the Association of Research Libraries (ARL), and the American Association of University Presses (AAUP).

Scholarly Production & Authoring: continue numerous ongoing experiments in new platforms for publishing and new genres (Scalar, Press Forward, MediaCommons and MLA's Digital First); develop metrics for use, influence and impact, and lasting value to scholarly discourses (scholarly societies, humanities centers, publishers, libraries, funders)

Assessment & Credit: articulate benchmarks of scholarly merit in digital scholarship; undertake scholarly network analysis; develop readily adoptable peer review and commenting systems for post-publication assessment; develop assessment and "microcrediting" systems for collaborative work involving professionals in scholarly communication (scholarly societies, humanities centers, libraries, publishers, administrators)

Shared Infrastructure: develop partnerships among scholars, libraries, and publishers to support new, streamlined production-and-use workflows that operate throughout the lifecycle of digital creation (scholarly societies, libraries, publishers)

Education & Professionalization: revise curricula to include skills currently required in scholarly communication professions, such as digital research and development methods, project management, design and editing skills, public writing and speaking; increase numbers of and access to venues that provide continuing education in new-model scholarly communication, such as regional institutes, and distance learning courses; investigate the appropriateness of the dissertation as presently practiced for preparing graduate students either for a lifetime of sustained scholarly productivity or for other intellectual but non-professorial career paths (scholarly societies, humanities centers, publishers, libraries, funders)

Funding & Support: develop a compelling articulation of how and why humanities is crucial for the digital age; and engage new sources of support for digital collection building, professional development, library and curatorial skills (SCI, ACLS, Council on Library and Information Resources (CLIR), funders)

The list of participants, agenda, background materials, summary of pre-session questionnaires, and additional materials generated during SCI 9 can be found at: http://www.uvasci.org/. The following essay reports on and integrates SCI debates on the near-term opportunities for moving the full cultural record of creation, reflection, and meaning-making online to shape a new information environment that embeds the histories and values of the humanities.

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THE CHANGING LANDSCAPE OF HUMANITIES AND SCHOLARLY COMMUNICATION IN THE DIGITAL AGE

This capstone session called upon participants from all sectors of scholarly communication—scholars and scholarly associations; organizations such as libraries, museums, archives, publishing houses, humanities centers, and professional associations; and higher education administration and funders—to

articulate a common agenda of actions necessary to strengthen "humanities in and for the digital age," as historian [William Cronon](#) phrased it. Although we invoked the metaphor of a roadmap for change, the image may mislead by creating a reassuring sense that we know where we want to go, that we will know when we get there, and that there is, indeed, a road to follow. Given the pioneering spirit exemplified by the participants, it is more apt to think of moving through uncharted territory and clearing a path for the humanities in a changing and unpredictable environment. The working mode of SCI has been to engage the imagination—we ask what an ideal system would look like if designed from the ground up—and realize that vision by modeling, testing, and then normalizing new-model scholarly communication strategies in everyday practice.

TRENDS IN HUMANITIES SCHOLARSHIP

The first task of realizing this vision is to inventory existing ambitions, capacities, divisions of labor, and gaps within institutions and peer communities. Participants examined inherited assumptions about the system of scholarly communication and identified trends now shaping knowledge creation and sharing both within higher education and beyond. Digital technologies are everywhere pushing against traditional practices from searching to citing, and from writing to reading. Significant trends within higher education to be reckoned with include:

- *disruption of the academic job market*: "adjunctification" of research and teaching faculty, loss of tenure-track positions, recombining of roles in teaching and research, post-doctoral positions with no clear career to move into, and the rise of self-styled "[alt-ac](#)" or alternative academic careers by highly skilled humanities professionals opting out of proto-tenure careers and into new-model scholarly professions

- *disruption of supply of and demand for expertise*: shaking up received notions of professional profiles and expectations in research, teaching, publishing, librarianship, and, consequently, preparation for these careers

- *disruption in the roles and responsibilities played by institutions*: libraries, archives, and museums are taking on additional digital stewardship responsibilities and publishing content to the Web; digital humanities centers often exist alongside traditional humanities centers rather than within them; academic publishing houses are being challenged by new publishing consortia and enterprises; scholarly associations' traditional services of hard-copy journal publishing and annual meetings are eroding in value

- *breakdown of business models*: publishers, libraries, and scholarly societies are struggling to provide services that add value and are

financially sustainable; chronic lack of access to even modest capital hampers their ability to experiment and innovate

- *breakdown between theory and practice*: forced by new communication technologies that strongly link making to theorizing, intellectual agendas are exploring new relations between media and knowledge creation that upend print-based practices of assessment and recognition

These changes have particular meaning in the context of larger social, political, and cultural upheavals in the very world that higher education is designed to prepare students for. Most relevant for the humanities are:

- *changes in the nature and constitution of the audience* (for humanities and all online information): readers now expect to be active users and producers of content, not passive receivers of information; the time span between creating and posting content is short, and reception and reaction equally short

- *radical public-sector defunding of infrastructure*: this occurs in conjunction with stresses and break-downs in analog business models and raises more fundamental questions about the value of humanities to society. The private-sector funder Don Waters noted massive defunding makes questions about whether the digital humanities is real scholarship seem trivial. We must "tie our work to the larger tasks of articulating, defending, and advocating the role of humanities in post-industrial, globalizing society."

- *rise of informal peer-to-peer networks of knowledge*: the blurring of distinctions between expert and lay, academic and public scholars, and scholars and the public is potentially a sanguine development in a democracy that assumes a well-informed citizenry; but it poses challenges to professionals and the processes of professionalization

- *IP regimes*: across all media they are out of sync with the impetus to share, use, and reuse knowledge; and they fail to provide the necessary means for cultural heritage institutions to curate, preserve, and ensure long-term access to digital content

HUMANISTIC RESPONSES TO THE DIGITAL AGE

In the scant decade or two since the beginning of the migration of knowledge creation and sharing to the Internet, humanists have faced these trends squarely—though far from uniformly—both as a series of unfolding challenges to address (especially in areas such as IP and publishing), and as extraordinary opportunities for humanists and their disciplines to engage new questions with new generations of students and users. The growing number of humanists who are embracing multimedia methodologies and more collaborative modes of

working, such as the SCI participants, are reporting very promising developments in research, teaching, and public engagement, including:

- new links between evidence and argument in publication, deeply inflected by the availability of abundant primary sources online
- new attention to curation and aggregation of sources and interpretations
- new communities of discourse arising rapidly to share, validate, comment on, and point to new scholarship
- changing vectors of academic communication from vertical to horizontal, engendering new rhetorical forms and engaging new audiences
- new professional tracks, such as alt-ac (alternative academic), to assume new positions in libraries, humanities centers, research labs, and presses
- new service models in libraries that support collaboration, curation, and dissemination
- new sites for scholarly production, assessment, and dissemination in learned societies and humanities centers
- new alliances between traditional and digital humanities centers, based on common research agendas around disciplinary change and emerging digital publics

GAPS & NEEDS

What will it take to accelerate these developments? Steven Wheatley of the ACLS provocatively compared the challenge of new scholars and new disciplines to that of entrepreneurs.

> Every scholarly career is something of a start-up enterprise. The academic develops a particular product—a book, an article, a topic, but really a specialization—and then brings it to market in a field or discipline. If the product finds acceptance (finds customers, that is), then the start-up is started up and the ambitious, active scholar will be able to follow newer and more developed version[s] of her product.

This trajectory holds for new scholars and new disciplines alike. What is important is bringing an idea and a product to an audience; and it takes a deep and extended educational system to create good scholars, to support their work, and to support the conversation between scholars and audiences. In the digital age, the start-up demands bringing together many dispersed and siloed strands to support scholars and audiences, to align strengths and interests, match resources to needs, and create new partnerships among actors who may be unknown to each other but share common goals.

Concerted actions in five overlapping areas—scholarly production and authoring, assessment and credit, infrastructure, education and professionalization, and funding and support—were defined and charted for our road map, based on cross-sectoral debates that ranged over theory and practice, people and places, processes and products, and action and reflection.

SCHOLARLY PRODUCTION & AUTHORING PROCESSES

Participants emphasized that scholarly production and communication are being remade not only through technologies per se, but even more so by vast changes in audience, attention, and the construction of authority. The template for print-based scholarship operative in the last century is losing value more quickly than a new template is taking its place, though, and this is creating a sense both of insistent pessimism about disruption in some quarters (though not among those at SCI) and exhilarating organizational and epistemological ferment on the other. What has emerged is still very fluid and literally under construction. We will focus here on three tested models addressing audience, attention, and authority that will serve as a lens through which to view the larger landscape of telling changes and of the shape of things to come. The models examined at SCI also shed light on the fundamental issues under debate happening on campus, online, and in face-to-face meetings: what are and should be the primary genres of humanities scholarship in the digital age, and how their scholarly merit is recognized and rewarded.

1. **Multimedia Publishing**

   How do we fully integrate and take advantage of multimedia sources (moving and still image, audio, cartographic, textual, and manuscript data), analytical tools (geographical information systems, data mining, visualizations, sampling) and presentation strategies?

Disciplines such as visual culture, media studies, sound studies, and architectural history, among others, are embracing the potential of multimedia to represent primary sources in rich media and to present interpretations. The [Alliance for Networking Visual Culture](#) (ANVC), a coalition first conceived at SCI 5 in 2007, has worked with university presses and media archives to pioneer a new platform for research and publishing, [Scalar](#). ([Vectors](#) is an earlier example of such an inventive platform.) ANVC scholars are propelled by new ways of collecting, curating, and analyzing data to create publications in which image, sound, text, geospatial visualization, and so forth, are not only routinely used, but are fully integrated, one not subservient to the other. [Tara McPherson](#), a media scholar from USC, and [Ellen Faran](#), director of MIT Press, reported on their collaboration around Scalar and directed our attention to the recent publication of a Scalar-based work, [Learning From YouTube](#) by [Alexandra Juhasz](#). In addition to the positive response that this new-model publication has inspired among many scholars, it brings forward a host of matters that need to be rethought in the digital environment. Multimedia publications should provide:
   - Integration of primary resources into a short- or long-form argument
   - Normalized citation practice. This implies a fixed version, which may run counter to the impulse of time-based and interactive media, and thus raises significant epistemological issues
   - Protocols for quoting. These should enhance scholarship and teaching and help to rationalize fair use in the online world

- Accommodation of varying granularities. McPherson suggested rethinking or inventing hybrid forms, in which the short and/or interactive is tied (somehow) to a longer form
- Collaborative space within the project. This should host the entire production team as it begins to work on the product and extend to allow creators access to archives and applications such as the ANVC partners Internet Archive, HyperCities**,** the Hemispheric Institute, and other projects and publishing environments, scholarly societies, and humanities centers
- Copyediting. Editorial staff need new procedures and workflow for multimedia copyediting because it is "seriously different from copyediting in traditional books"
- Editorial skills that embrace design. Editors now need to have what Faran call "spatial orientation," understanding how the multiple elements of the presentation—text, media, workspace, annotation and commentary—fit together
- Need for new user metrics. Publishers do not yet know how to gauge if they are reaching the desired audience

These needs all provoke deeper intellectual questions and spark the "exhilarating ferment" that is an abiding affect of this work. How can we use archives to make novel arguments or, as McPherson put it, "How might scholars inhabit the archive anew?" And in the case of Shoah Foundation's historical materials about the European Holocaust, how do we pay attention not just to the audience's needs or the creators' desires, but to the demands, ethical and otherwise, of the sources themselves and the organizations that assume responsibility for securing them over time?

Evaluation of scholarly merit becomes problematic. People expert in scholarship and technology are needed, because the benchmarks of excellence in argumentation include the design and programming. Further, we have only a provisional sense of *reception*, both within the academy and beyond. Are there analytics that will help? Trying to adapt traditional book analytics here is tricky, not least, one press director said, because such metrics turn out to be more notional than real in the end, having the power of tradition behind them but surprisingly little else.

Finally, Faran asserted that a project's team of authors, editors, technologists, designers, and marketers need to come together around these questions well before the product is written, assembled, coded, and programmed. It is extremely important that multimedia publishing is done as a collaboration between scholars and publishers, not as arms-length hand-offs from scholar to editor, editor to designer, designer to programmer, programmer to marketer. The conversation must begin at the beginning and be sustained through the iterative process of scholarly production.

2. **Direct-to-Web Scholarship**

How do we create and share knowledge on the dominant and most democratic publishing platform of the digital age—the World Wide Web?

The widespread phenomenon of publishing directly to the Web challenges our assumptions about writing, reading, and attending to scholarship. What [Dan Cohen](#) and [Tom Scheinfeldt](#), historians and director and managing director respectively of the [Roy Rosenzweig Center for History and New Media](#) characterize as *the Web way* equates to disseminating scholarship online in multiple stages of development, inviting review and building audience simultaneously. Recognizing that the Web places novel demands on our attention, our notions of authority, and especially on building and reaching audiences, Cohen and Scheinfeldt are creating a publishing platform, [Press Forward](#), and suitable protocols that will prototype Web-based, peer-reviewed scholarly discourse for the humanities and beyond. They aim to create new audiences for scholarship at the same time as they expand new modes and tempos of discourse for scholars and creators. Their goal is to "develop effective methods for collecting, screening, and drawing attention to the best online scholarship." In the process the builders expect to generate as many questions as answers for some time to come, thus becoming one of "the problem factories" that Waters said we need many more of at this juncture.

This model does not envision the scholar authoring in isolation, submitting the product to a group of selectors/editors, with review and changes made prior to publication. It starts where people and content are—on the Web—and garners attention, attracts an audience, and creates value as it engenders a community looking at and reacting to common things. Press Forward takes scholarship published directly online as the starting point and focuses on aggregation and curation. In this model, evaluation, critical response, and validation happen in a more open fashion that involves multiple respondents, distinct from traditional closed review by an anonymous handful of peers. Identifying value therefore means sifting through a superfluity of scholarly and scholarly information to find items that merit attention, based on peer assessment, citing, and use. The community creating and using the discourse must figure out how an evaluative body can point to it. The builders of Press Forward anticipate that this will develop into a "plug-and-play" platform with relatively low entry costs that scholarly societies can use. By doing so, the value that societies would add to content is the authority and reach of the scholarly association.

This experiment in Web-based discourse entails an extended view of the scholar as author. Scheinfeldt refers to the scholar crafting an online persona as the Web way of creating a profile and portfolio. This demands active curation and stewardship of one's own scholarship over time. The good work habits that shape a portfolio over a career must begin in graduate school. This Web-based approach also has implications for the libraries and other stewardship organizations necessary for the long-term integrity of and access to this material. It implies the development of business models that can support production, distribution, use, and curation in environments that are essentially open and evolve over time.

The concept of demand proves to be a useful frame for fresh thinking about audience. Until recently, arbiters of demand for humanities scholarship have been university presses and curriculum committees. While still quite powerful, they may be running against a strong current and risk being caught in the drift. As the historian Jim Grossman noted, we are still trained to do long-form research and writing, but how many of us do long-form reading now? We need to develop more granularity in our genres, such as the kind of hybrid forms that McPherson mentioned. The modeling and testing of such approaches as Scalar and Press Forward are the very best way for scholars and audience to connect and discover what the appropriate modules of granularity are. But there need to be many more such robust models-as-problem-factories—sites of invention, reflection, participation, and learning. The bodies of prestige, validation, and authority such as scholarly societies, university presses, humanities centers, and individual scholarly leaders need to get involved and become responsible partners.

3. Dissertation and Monograph Genres

What are the scholarly digital genres that accommodate short- and long-form arguments, and what do those digital genres tell us about the "dissertation-as-proto-book" as the most appropriate preparation for a career of productive scholarship? Indeed, what are the intrinsic values of short and long forms in the digital era?

Concomitant with the appearance of multimedia and Web-based genres, the fate of the monograph and its training form, the doctoral dissertation, is very much under scrutiny. The first-order question here is about the relationship between disciplinary epistemologies and communication technologies. Which fields require new information technologies? Are there fields yet to emerge that we can uncover only with these new technologies, as the history of the book suggests? Something also to consider is to what extent the monograph is at risk intrinsically, or under economic pressures, or both. Finally, if we were to invent a long form for the Web, what would it look like, who would be its audience, and what preparation would we require of graduate students aspiring to create it? Chances are, people concluded, the invention would not bear much resemblance to today's monographs. Nor would its training form be today's "proto-book dissertation" form.

The Modern Language Association (MLA) has looked into these questions and the dissertation in particular with their New Dissertation program to explore the forms necessary for the dissertation. Do we really need to keep using the codex as a model? MLA Council member Kathleen Woodward noted the dissertation is a hinge on which so many things depend and take shape. The dissertation cannot take a form that is not economically viable (ie, the monograph); and economics here means much more than business and cost models. It means how the academy decides where the human capital of its graduate students should be directed as they prepare for a life of productive scholarship. Kathleen Fitzpatrick challenged us to think about what a life of productive scholarship

will look like over the next thirty years. The answer is "We don't know." But no one would bet on it revolving around putting out a succession of hard-copy monographs on increasingly specialized topics. Hence the legitimate confusion about what the dissertation should be now.

McPherson argued that what the dissertation should be is a project that demonstrates intellectual maturity, is not beholden to advisors, and works from essentially original research. Wheatley remarked that in terms of assessing a junior scholar's output, the book and article have no inherent value; their value is an assumed future value. The dissertation is meant to demonstrate capacity in relation to some body of knowledge, so among the things the dissertation should do is demonstrate knowledge of an existing corpus and demonstrate capacity as well. Capacity for *what* is the question now. Woodward challenged the notion that capacity for argument should be the sole essential criterion for assessing scholarship. Is the dissertation something whereby we create and persuasively present new knowledge? Is it about the curation and preservation of knowledge? Can we imagine that a new-model dissertation would be a translation, a collection of essays, original digital objects, or curatorial projects?

Another question is how the attitudes around the dissertation change the nature of the late-stage graduate career. Wheatley reminded us that there is no longer a rush to get people into the academic job market, given the paucity of demand. As for the post-doctoral academic positions, which are increasingly seen as a purgatory that does not have a clearly marked portal to the heaven of tenure-track, there was a consensus that these positions need to be radically rethought. One thing we've ascertained about 21st century careers: the ability to navigate the online environment and to disseminate knowledge to an audience is critical for both academic and nonacademic jobs. Digital literacy is crucial to impart during graduate training. Senior scholars reported seeing too many cases of what Woodward called "anticipatory remorse," when advisors will not support a certain kind of dissertation (ie, digital) because they think it will ruin their students' career chances. How can the expectations for humanities scholars be so at odds with trends in society? (The question of what education and professionalization means is taken up in greater detail below.)

While participants define the specific end goal of the dissertation as preparation (even though that left huge questions about preparation for what), the monograph has a harder time finding agreement on its *intrinsic value going forward.* Putting aside vexing issues around finding an economic market for monographs, there was some agreement around the idea of the long form, however it is named, as offering unique value in the online environment. As our attention becomes increasingly fragmented, the book itself may provide even more service with its boundedness, so different from the open Web. It is contained; and decisions about what is inside and outside are quality and value decisions. As [Richard Brown](#) suggested, "The book is the anti-open-Web. "

A Note on Fair Use
No discussion of genre formation can elide the problem posed by the perceived failure of fair use exemptions to protect scholarly quotation and reproduction.

Fair use is essentially the right to use a small part of something under copyright for specific purpose. How that plays out online is controverted. A number of recent studies on fair use can shed some light on various media.[1] But we lack appropriate information to make sound judgments about what is and is not under copyright, such as databases in which to look up what rights have been retained for which purposes. There are some institutions with rich cultural materials that are ready to open access for broad use, such as Yale University, and some museums that are also favorable to sharing their resources. It is important to address an umbrella organization such the American Association of Museum Directors to push for freer access to museum collections.

Museum collections are encumbered by the considerations both of living artists and by potential donors. What will make a difference is providing alternative business models that allow museums and publishers to operate with freer access by offering in exchange such goods as capturing e-mail addresses, hosting community discourses to expand reach, and connecting their publics with scholars.

Process, not Product

As an increasing number of inventive models push out shared notions of production and authoring, there are some notes of caution to keep in mind. It is important at the beginning of each project to think about the lifecycle of the outcomes. We should not make "preserve it" the default mode for everything. This is where integration of projects with libraries as partners becomes crucial. A second note is to ensure that the product, no matter how open or closed, becomes part of a knowledge network. This will improve the project by inviting feedback. And it builds audience. But in a larger sense, it has evolved into a responsibility within the scholarly community to transmit experiential learning about how knowledge is created online.

What is the locus of such a network? Anne Helmreich cited a recent example of an art curator who asked about digital curation: where is he going to find out about how to do it? Where is the template for a digital catalog? How would he find a knowledge network to plug into? Establishing such readily accessible networks of knowledge that are able to keep current with best practices as they change is an important piece of digital infrastructure.

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[1] See Simon Tanner's report "Reproduction charging models & rights policy for images in American art museums; A Mellon Foundation study," available at: http://www.kdcs.kcl.ac.uk/fileadmin/documents/ USMuseum_SimonTanner.pdf; the Association of Research Libraries' report on fair use, "Fair Use in Research Libraries," available at: http://www.arl.org/ bm~doc/mm10fall-butler-jaszi.pdf; and Stanford University's site on copyright and fair use, available at: http://fairuse.stanford.edu/Copyright_and_Fair_Use_Overview/chapter9/9-b.html

[Julia Flanders](#) warned against a slippage of terms that occurs as we go deeper into uncharted territory—for example, the frequent if unintentional muddling of digital, quantitative, and technological. These are distinct categories; reinforcing their distinctions in our debates will help give us some stream of clarity in what is a necessarily turbid river of discourses. [Neil Fraistat](#), perhaps harkening back to the time of his specialty, the Romantic Period, before the word "scientist" was coined, urged us to lose humanities as a term, to the extent that it has come to connote "other than science." Both appeals come from experts long adept at using digital technologies in the service of humanities scholarship, and indicate at a minimum that a time of deep engagement with new epistemologies and subtle, sophisticated reasoning around disciplinary formation is close at hand.

ASSESSMENT & CREDIT

The fundamental question—how do we identify and reward good scholarship—remains constant in humanities in the digital age. That said, assessment and credit for new-model scholarship cannot easily be picked apart from its creation and sharing. Nor is it a simple matter to pick apart audiences when we talk about assessment *by whom* and credit *for whom*. They beg new thinking, and devising new, appropriate protocols requires thinking by doing.

What to credit

There are numerous types of scholarship that go into the creation, sharing, curation, and stewardship of humanities content. Yet as rule, only monographs and articles—two specific types of final outcomes—garner their single authors credit and reward. (A list of numerous scholarly products was generated during SCI 8, and Cohen reproduced this list in [his presentation at SCI 9](#).) Scholarly societies and their umbrella organization such as ACLS should begin conversations about micro-crediting—granting credit for different granularities of scholarly contribution, from review work to editing. Some argued that scholarly value extends far beyond creating knowledge; just as important and credit-worthy is being "a node of knowledge," of discerning value, aggregating and curating content. They exert noteworthy impact on the direction of scholarly conversations. Different members of scholarly communication professions, such as scholars, librarians, publishers, programmers, designers, and others should receive reward and credit appropriate to their profession. Knowledge of the criteria for assessment across professional boundaries should be widely shared among cognate professions.

Who decides

Who constitutes the appropriate peer group? The argument for open peer review is that it broadens the pool of opinion to create a larger sampling and a smaller error rate. We are well aware that there are traps with impact factor and manipulating quantitative data. But there are also traps with small anonymous review pools as well, especially as the practices of scholarship are

metamorphosing so rapidly. Finding the individuals capable of reviewing new-model scholarship is not easy. Another advantage to open review is that it attracts an audience for content—or it has the potential to. The matter of finding time to review carefully does not change just because the review is open. Article-level metrics that measure downloads, time on page, citations, formal language analysis, experimenting with use of [MESUR](#), [Mendele](#), and [Zotero](#) should all be tested.

LEADERSHIP & ORGANIZATION

Leadership Strategies

Humanities is Janus-faced: studying and conserving millennia of human experience, at the same time focused on an unfolding future. At this juncture, when the core communication strategies of humanities are under such fundamental metamorphosis and ongoing negotiation, leadership among each of the professions of scholarly communication is critical. As mentioned, leadership takes the form of modeling and testing new practices, exploring foundational epistemologies and methodologies, and historicizing the present both to locate meanings and to bring the full human experience forward into the present. Peer-to-peer review and adoption has long been the standard of humanities ethics in practice; social and economic changes put a premium today on creating knowledge and sharing it.

The "build it and they will come" model of constructing digital infrastructure has proven notably inefficient and ineffective. A better strategy is to locate where people and energy congregate—both online and face-to-face—and add value. The approach then is "Ask not what the online world can do for the humanities; ask what the humanities can do for the online world." Because the system of scholarly production and communication is a prestige economy, it is important to recruit high-impact individuals and prestige organizations to model practices and behaviors, publicizing, normalizing, and thereby making adoption of them desirable. Moreover, it is easy to overweight technology. Participants urged focusing energies around pressing scholarly issues, key intellectual and organizational questions of moment, and not designing the generic, the modish, the clever. Model, do not exhort. Build a community of discourse, not just your own CV.

What follows is a summary of the key points made about the professional sectors vital to scholarly communication; despite our rhetorical segmentation by familiar professions, we emphasize that the roles and responsibilities of contemporary professionals are extraordinarily fluid, with individuals and organizations playing multiple roles simultaneously.

Organizations

Scholarly Societies. Societies have the potential to become online nodes of deep knowledge. Amidst wide recognition that scholarly societies must reconceive

their member services for the digital age—given both the economic changes in revenue models tied to annual meetings and hard-copy journal publication and changing audience expectations—participants focused on the exact nature of the services they can provide to members and the larger public. The intellectual capital and prestige of scholarly societies makes them uniquely positioned to model forms of peer review of new objects of knowledge and new methods of review, as mentioned above. Individual societies are best suited to advocate for new standards of tenure and promotion that include digital work. Societies must show by example, not simply advocate: they can begin by featuring new-model scholarly communication processes and products in their journals, in their meetings, and in Web-based conversations they host. They are well-positioned to contribute scholarly authority to parts of the online world that need it, such as Wikipedia, or to add value to the digitized corpora found in Hathi Trust and Google Books collections. They can also develop new forms of bibliographies, citation protocols, and so forth. ACLS member societies can begin sharing their online resources amongst themselves, experimenting in nonmonetary "barter trades" such as reciprocal access to online resources. They should begin researching the new forms of scholarly network analysis, online commentary forums, and sorting through all facets of knowledge creation, curation, and sharing that warrant microcredits.

Humanities centers: The alliance between the Consortium for Humanities Centers and Institutes (CHCI) and centerNet (the consortium for digital humanities centers) that resulted from conversations sponsored by SCI, is clearing a path to integrate the agendas of so-called traditional humanities centers and those focusing on so-called digital humanities. They are identifying numerous practical services they can provide to each other by sharing their expertise and methodologies, practices, and skills programs. More significantly, they are undertaking sustained investigation into research and programmatic agendas that become possible only by bringing the two groups together. Their initial areas of focus are digital disciplines, and digital publics. The first focus addresses disciplinary transformation emerging from new information technologies. The second focus is looking at the dynamic relationship between academic expertise and networked public knowledge. Both programs will result in deeper sharing and collaboration, eroding boundaries between theory and practice, providing a venue for assessing and re-crafting credentialing criteria, providing an unprecedented international reach, and developing what they style "the consortial imagination." We know consortial action and collaboration is a precondition for success in the digital age. And we know it is difficult to engender and sustain collaboration. Therefore, this development promises to be uniquely significant for the humanities in and for the digital age.

Libraries and publishers: Bethany Nowviskie and Shana Kimball presented compelling examples of how libraries are providing new services for research and publishing in the digital age. The Scholars' Lab at the University of Virginia Library has rapidly emerged as a leader among library-based digital humanities centers by determining that, in addition to serving faculty needs, it is important to capture the attention and energy of technologists and graduate students. The Lab provides staff with dedicated time to pursue their own scholarly research

agendas and graduate students with the tools, space, and intellectual stimulation to stretch their imaginations, learn to collaborate, ask new humanistic questions of their materials and methods, and get early exposure to software development and design techniques. What has made the Scholars' Lab a model for other universities is: first, that it is embedded within the library with rich primary and secondary sources and staffed with expertise across many academic disciplines and technologies; second, through fellowships and paid apprenticeships it provides students with opportunities for research and experimentation not otherwise available; and third, that it focuses as much on building communities of practice and networks of knowledge as building finite or fixed digital objects.

Kimball described the [University of Michigan library's](#) grand experiment in bringing together the library, scholarly communication office, university press, and electronic publishing unit into one universe. The library is building on its traditional strengths to aggregate the many stages of scholarly communication and production, from the holdings in the library through its republication, use, further curation, and preservation. They are building and testing a new form of sustainability for publishing and scholarly production that embraces expertise in copyright, text creation, digital and analog preservation, and a venerable university press. Acknowledging that there is lots of overlap among functions, they are hoping that the overlap will actually provide an especially strong, responsive, and responsible infrastructure over time.

These examples of libraries expanding the scope of their responsibility in the digital age are not meant to be either proscriptive or prescriptive; but to provide reliable real-world models of how organizations deeply embedded within an existing analog infrastructure are rethinking the roles and responsibilities they have for online scholarship. Libraries, museums, and publishers all are facing extremely vexing choices. They are expected to maintain traditional services at the same time as moving swiftly into the future, most of which is only partially discernible. None of these organizations are well capitalized; finding the space, time, and resources to experiment and to risk failure for the sake of learning is perhaps the biggest challenge of all.

For some it will seem unnatural to lump libraries and publishers together. But the bifurcation of these complementary functions that occurred organically during the age of print turns out to put digital scholarship at high risk of corruption and long-term loss. University presses themselves are calling for closer working relationships with libraries, and the recent [self-reflective report by AAUP](#) acknowledges the need for fundamental change and imaginative alliances, beginning with reaching out to each other and to sister organizations on campus such as libraries.

SHARED CAPACITIES

The greatest common need identified by publishers has been to retool workflow for digital production. Streamlining workflow is inefficient and quite possibly

even impossible to do for each and every university press singly, on its own. Optimal workflows do not demand one size to fit all, but they do demand a different ecology of collaboration, beginning with identifying which aspects of publishing and long-term curation and stewardship are best done in a centralized fashion, and which are best left to local and disciplinary customization. The consortial imagination is necessary for all sectors of new-model scholarly communication, from scholarly societies to libraries, archives, museums, and publishers. As scholars discover that doing scholarship online is as much about building and sustaining communities of discourse as it is about producing individual pieces of scholarship, we can imagine organizations coming to a similar realization: that to work effectively in the digital environment means to collaborate where economies of scale are critical; and to grasp that there is more than enough room for multiple organizations to deliver specialized products and platforms for project teams, disciplines, and organizations.

The need for robust infrastructure across disciplines and campuses becomes obvious when thinking about the demand of digital information for what is known as lifecycle management, an integrated approach to persistent access to knowledge by ensuring that from the time of its inception digital information is created in formats that are technically, economically, and legally sustainable; and that creators and curators understand distinctions among content designed for obsolescence and designed to be sustained over time. University of Virginia library director [Karin Wittenborg](#) reminded us that without digital preservation, none of these efforts will be worth much in the long run or even in the short run. Not everything created deserves to be preserved; some of it is created for short-term purposes. Libraries need to keep decisions about preservation relatively simple merely in order to deal with the volume of content that is pouring in. What is optimal, she argued, is for scholars to do "self-deposit" into a repository with specified retention periods. Effecting this change requires scholars embrace knowledge curation as intrinsic to knowledge creation. This is one aspect of developing an online persona that Scheinfeldt mentioned—the capacity to make judgments about what should be sustained, by whom, and for how long.

Both Don Waters of the Mellon Foundation and [Josh Greenberg](#) of the Sloan Foundation called our attention to the importance of thinking creatively about new divisions of labor and new models for collaboration, community, and consortia. Each consortium will have its individual reason for being. Just as the collaboration between CHCI and centerNet has well-defined goals to forge new research and program agendas; and collaboration among several different units at the University of Michigan is designed to build strong infrastructure for the full lifecycle of scholarly communication, so we can imagine a series of collaborations with discrete goals in mind, each important in the ecology of new-model scholarly communication. What makes the ANVC of special interest here is the ambition of visual culture scholars to develop new workflows for collaboration among scholars, scholarly societies, libraries, archives, museums, and publishing houses. This discipline-specific model may find very fertile ground within scholarly communities in coming years. This approach also

provides opportunities for presses to come together and sort through which areas of digital scholarship they identify as their niche going forward.

Expanding a network of resources and sharing institutional capacities are important across the board, for no institution, no matter how well resourced, can build a standalone digital infrastructure. But beyond that, building shared infrastructure may be the only way to address the lamentable divide between digital haves and have-nots, a divide that is growing greater each year, separating public and private universities, comprehensive universities and liberal arts colleges, and various regions of the country. Although equal access to funds across the system is important, Josh Greenberg noted that there is already enough money in the system to move humanities forward. What hinders us is a combination of insufficient commitment to the well-being of higher education as an integrated system, and immature or inappropriate models— mental maps, if you will—of robust consortial infrastructure.

EDUCATION & PROFESSIONALIZATION

Education and professionalization are topics that were woven into every aspect of our discussions; it is misleading to pick them out from the context in which skills and expertise are needed. That said, scholarly communication professionals urgently demand changes in their preparation and opportunities for advancing on the job. The changes in roles and responsibilities taken on by organizations are occurring simultaneously with the emergence of new practices and expertise needed by these organizations. The skills necessary to be a producer and steward in digital scholarly production are significantly different from those embedded in the print model, and the differences go far beyond technical and computing skills. Most significant is, rather, a new way of thinking about how to identify and solve problems. Seeking the perfect solution, just like seeking a final, fixed version of scholarly argument, is counterproductive in a digital production environment. Change and evolution is the norm, and thinking coupled with experimenting and learning—the iterative process—is an appropriate and surprisingly efficient way to make progress both in solving problems and, in turn, properly identifying new opportunities and new problems.

Graduate students: On the majority of U. S. campuses, the integration of new technologies and practices into graduate education is ad hoc at best, and bordering on the negligent in some disciplines and on some campuses. Negligent in the sense that graduate students are unfairly and unrealistically expected to command digital literacies as a matter of routine, at the same time that they are told that these literacies cannot count for promotion or even in completion of the dissertation satisfactorily. There is widespread agreement that it is not until new graduate curricula which include core digital literacies have been developed, tested, and widely implemented that appropriate integration of 21st-century research skills will occur. Among the literacies identified as basic are:
- text mining

- elementary programming
- visualization
- quantitative methods such as statistics
- geospatial analytical and presentation skills
- knowledge of intellectual property
- project management skills
- grant preparation
- university administration
- public writing and speaking

In addition to these basic skills imparted during graduate education, ongoing educational needs suggest short-term institutes that provide discipline-specific skills training and updating, such as those offered routinely by the medical and legal professions; some of these sessions could offer certificates. Institutes along the lines of the Digital Humanities Summer Institute should expand in number and scope, to be held both regionally and online. They can be convened and sponsored by scholarly societies. The latter could offer discounted rates for these training opportunities as a service to members.

New professions are emerging in scholarly communications, and the group that style themselves as alternative academics are forging a variety of new career paths as they pioneer the new modes of production and authorship. (Their work is documented in the #Alt-Academy project published by MediaCommons.) Many humanists with graduate degrees are veering off the straight and narrow path of tenure track to pursue their research and service agendas in entirely new ways. By necessity working collaboratively and as true entrepreneurs, they contribute to scholarship and to new organizational models. It is important they identify the working conditions they need to continue their pioneering work, for many of them face a clash between their expectations as scholars and researchers who can set their own agendas and claim ownership or control of their work, with the requirements of working in organizations key to infrastructure, such as libraries and presses, where the collective and managed enterprise works on different principles than that of individual scholarly careers. Among the questions this cohort points us to are the ways undergraduate as well as graduate education should be changing to prepare students for advanced literacies in the digital era. They also demand attention to the purposes of the dissertation as professional training ground when the profession at the end of training is an alternative to the traditional tenure-track.

SCI participants called on organizations such as CLIR with its longstanding postdoc program for humanities PhD, to work through the vector of the #Alt-Academy project to survey alternative academics and their employers for perceived gaps in professional preparation.

FUNDING & SUPPORT

The attendance of numerous funders at SCI is but one indicator of the changing landscape of humanities funding. The current precipitous decline in public-

sector support for higher education hits the humanities with particular force in undergraduate and graduate schools. Simultaneously, there are an increasing number of private-sector funders beginning to recognize just how fundamental humanities education is in the digital age. The challenge for them is to identify points of strategic intervention in a rapidly changing landscape that would either incubate or accelerate desirable change. Several participants noted that the collapse of the remnants of the Cold War public-sector funding strategy, with its emphasis on instrumental educational means towards instrumental social and political ends, has created gaping holes in knowledge of foreign languages and cultures precisely the moment when they are in greatest demand. The need to find new funding sources for these and essentially all humanistic competencies means that we need new funding strategies. Which funding streams will create digital infrastructure, encourage focus on scholarship itself, and, at least in the short term, produce a number of "problem factories" that challenge received wisdom about the best way to do things and point us in new directions?

One of the new directions participants returned to time and again is the need for building mutual dependencies to create economies of scale and strengthen ties among the sectors of humanities who share values and goals. Mobilizing communities for "digital philanthropy" will require making a compelling case for their engagement, and helping to identify strategic interventions has become the urgent work of scholarly societies, libraries, publishers, and all leaders in scholarly communication. Participants brainstormed the needs and opportunities that need outside support. They include:

- Supporting experiments for collaborative work among libraries, presses, scholars
- Convening conversations to build knowledge networks
- Incubating new organizational and consortial models
- Building and donating digital collections, software, hardware, dedicated laboratory space, and so forth

VIEWS ONTO THE FUTURE

Trying to imagine an ideal system of scholarly communication without falling into the trap either of projecting past models into the future or lapsing into technological determinism has been an ongoing challenge throughout the history of the Scholarly Communication Institute. We have been fortunate to have participants well grounded in deep and deeply historical humanistic thought able to offer guidance. At SCI 2, which addressed the emerging discipline of practical ethics, the philosopher William May proposed that what faces us is essentially a moral challenge, one that the humanities has faced often. The vector of communication in the Academy settled long ago on the vertical, from the mentor to the mentored and back. Digital technology favors the horizontal over vertical communication; this offers humanists a longed-for opportunity to communicate both with each other and with the interested public. Humanists have a fine and nuanced knowledge of the human condition

in historical time, and we have an obligation to share our knowledge clearly, directly, non-dogmatically. In 2004, May predicted that this would lead to necessary changes in the genres favored by humanists, moving us back toward its originating form of the humanistic essay. Whether our new technologies result in a revival of the essay or the emergence of a novel genre, they do prompt us to re-examine and re-engage the fundamental means and ends of the humanities.

As debate at SCI inevitably gravitates towards discussion of review and credit, the questions of the norms of humanities scholarship have been raised consistently and with some consternation. What is humanities scholarship, and what is humanities research? At SCI 8 (2010) David Brownlee, an architectural historian and editor of the Journal of The Society of Architectural Historians, reminded us that humanities scholarship *is* what humanities scholars *do*. In midst of often difficult discussions about credentialing it is wise to remember that the desired outcome is not a perfect replication of the system and its tenure genres of monograph and article. It is the conscientious stewardship of human knowledge over time for the benefit of past, present, and future generations. That would argue today for the current generation of senior scholars to put in place for their successors a system that allows the same scope of freedom to define individual research agendas as they inherited from their predecessors. In the end, what we are striving for is a scholarship in which the questions of audience, attention, and authority in the online world remain provocative, discomfiting, difficult to resolve, and open for debate.

We asked a group of scholarly communication professionals who are building the humanities in the online world to describe an ideal environment that would nurture and support their ambitions, keeping in mind that we need to demonstrate value not just to review committees, or to each other, but to the public. They homed in on a set of principles, features, and actions they advised people to foreground as they develop an agenda for further exploration and experimentation.

In the 21st century, the production and communication of knowledge are processes that are inherently dynamic, interrogative, and dialogic. The model of the fixed expression of knowledge can be seen as a historical artifact of the need to fix an expression onto a durable form (stone, paper, film) to ensure ongoing access. The digital, however, returns us to a state of plasticity, similar to that of oral culture, that demands managing the lifecycle of knowledge in a dynamic and flexible infrastructure. The process of moving humanities into the online world will not be accomplished in a short period of time. Neither, in the long run, can we expect to see a system that is perfected and static. Nor will the scholarly communication professions be siloed into those who create, those who catalog and curate, those who preserve and serve, those who publish, those who administer, and so forth.

In such an environment, the necessary conditions for digital production and communication suggest building infrastructure along the following lines:

- *reduce risks of experimentation*—encourage what Kimball calls "strange institutions" and hybrid forms that would build on deep disciplinary knowledge and scholarly grounding, yet set aside the inherent conservatism of humanities disciplines and professions

- *connect and expand*—consortial thinking and efforts can spread and dilute the risks of experimentation, address scale and resource needs, and work to establish communities of practice

- *lower unnatural barriers*—redress the inadequate education and preparation for the new work of humanities; revise outmoded information and intellectual property policies; retool systems of recognition and reward

- *collaborate across unnatural boundaries*—libraries, presses, administrators, designers, and programmers should work with, not for scholars; collaborators must establish clear rules of engagement that respect natural divisions of labor, not those aligned with outdated and empty distinctions of prestige

- *acculturate and include*—nurture communities of discourse that can model behavior, socialize new forms, encourage learning by doing, and expand audiences

- *model behaviors*—embrace an iterative process, both for the purpose of learning by doing and for the purpose of modeling and socializing new forms

WHERE ARE THE NEW RESEARCH QUESTIONS?

[Michael Steinberg](#) noted that first-wave use of technologies have by and large supported existing methodologies and questions. [Miriam Posner](#) concurred that "most research using new tools seems to pose not radically new questions, but different versions of the same questions. The biggest change I've seen is in the tools that people use, not necessarily their methods." There is a tendency to confuse a new mode of argumentation—such as the use of multimedia—with a genuinely new research question. Part of this may be due to the fact that some funding streams have specified tool development as a goal in and of itself. Part of it is due to the inherent conservatism of disciplines, which increasingly differentiate themselves not by the subjects they address, but rather by the different methodologies they use, how they constitute a problem, and how they recognize and reward achievement.

And yet there has been an expectation for well over a decade that the radical refashioning of information technologies from analog to digital will change how scholars writ large identify, solve, and generate problems. We have witnessed new topics of research emerge—the environment, gender and the body—across

several different fields. But they have seldom been tackled anew, outside the usual sociologically distinct disciplines embedded in U. S. universities.

Technologies matter in disciplinary formation and development of new research questions to the extent that communities of practice arise around specific technologies, and that leads to communities of discourse—the origins of disciplinary alignments today. We know that new technologies allow for better pattern recognition, a long-standing interest both for humanists and scientists seeking both what is normative and what is exceptional in human and natural worlds. And we see initial forays into questions that bring several disciplines together, such as medical humanities bringing together the neurosciences, clinical sciences, performing arts, ethics, and narratology, among others. We see emerging interests that call together neuroscience, acoustics, musicology, sound studies, and other fields to study the aural ecologies we inhabit. Moving into new fields entails as much attention to disciplinary cultures as well as epistemologies, and this is an area where the potential for face-to-face discussions that identify both leading topics and leading scholars—cross-sectoral meetings such as SCI holds—could prove fruitful.

SCI was designed to foster experimentation, articulate the needs of online scholarship and the infrastructure to support it, and then get out of the way. Scholarly production and communication increasingly incorporate the cycle of imagination, experimentation, reflection, and further imaginative provocation. Since the inception of SCI, participants have noted a historic shift from thinking of the ends of scholarship as process rather than product. What has become yet more clear over the decade of SCI is how not only the end product of scholarship is in motion, but the scholarly communication system itself is "in process," infused with a dynamism that was unthinkable 20 years ago. As the vector of communication expands horizontally ever outwards, the humanities' core enterprise is to join in and lead the larger social project of fundamentally remaking audience, attention, and authority.

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NEXT STEPS

Scholarly Production & Authoring:

Actions:
1. Continue and expand ongoing experiments in new platforms for publishing and new genres (Scalar, Press Forward, Media Commons and MLA's Digital First).
2. Document and compile results of these experiments.
3. Develop metrics for engaged use, influence, impact, and lasting value to scholarly discourses.
4. Incorporate mechanisms in production and authorship that ensure projects can be engaged at different points of development.

5. Build new business models that support nested granularity.
6. Ensure digital lifecycle management through concerted alliances among producers, publishers, stewards.
7. Address fair use concerns by establishing disciplinary bodies of practice, extending reciprocity agreements among academic publishers, working with museums, libraries and archives to expand access to content and develop alternative business models to compensate for lost revenue streams.

Actors: scholarly societies, humanities centers, publishers, libraries, funders

Assessment & Credit:

Actions:
1. Articulate benchmarks of scholarly merit in digital scholarship
2. Undertake scholarly network analysis.
3. Develop readily adoptable peer review and commenting systems for post-publication assessment.
4. Develop and publicize assessments and micro-crediting systems for all professionals in scholarly communication

Actors: scholarly societies, ACLS, humanities centers, libraries, publishers, administrators

Shared Infrastructure:

Actions:
1. Develop partnerships among scholars, libraries, and publishers to support new, streamlined production and use workflows that operate throughout the lifecycle of a digital creation.
2. Develop cross-institutional collaborations between presses, libraries, research centers.
3. Extend reach of digital laboratory environments.
4. Build networks of knowledge and explore mechanisms for continuing cross-sectoral conversations to share knowledge and accelerate collaboration.

Actors: scholarly societies, ACLS, CLIR, humanities centers, libraries, publishers

Education & Professionalization:

Actions:
1. Develop new curricula and apprenticeship opportunities that address the actual skills required in scholarly communication professions.
2. Develop new curricula for research methods, project management, design and editing skills, public writing and speaking.

3. Increase numbers of and access to venues that provide lifelong education in new-model scholarly communication, such as regional institutes, distance learning courses, and so forth.
4. Investigate the appropriateness of the dissertation as now practiced for preparing graduate students either for a lifetime of sustained scholarly productivity or for other intellectual but nonacademic career paths.
5. Develop a network of labs and centers in which graduate fellowship and practicum programs can be tested and best practices shared.

Actors: scholarly societies, humanities centers, publishers, libraries, funders, SCI

Funding & Support:

Actions:
1. Engage new sources of support for digital collection building, professional development, library and curatorial skills.
2. Articulate a compelling case for humanities in and for the digital age by documenting, aggregating, synthesizing, and publicizing concrete contributions.
3. Incubate and accelerate new models of consortial thinking.
4. Provide startup funds to experiment with new models for peer groups, university presses.

Actors: SCI, ACLS, CLIR, private-sector funders

SCHOLARLY COMMUNICATION INSTITUTE 9
NEW-MODEL SCHOLARLY COMMUNICATION:
ROAD MAP FOR CHANGE

July 13-15, 2011

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