

SCHOLARLY COMMUNICATION INSTITUTE 5: VISUAL STUDIES

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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

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 $\frac{1}{4}$ billion downloads of its software; Flickr had $\frac{1}{2}$ 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— $\frac{1}{4}$ original, $\frac{3}{4}$ 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.

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).

³ <http://www.clir.org/pubs/issues/issues57.html>