SCHOLARLY COMMUNICATION INSTITUTE 9

New-Model Scholarly Communication: Road Map for Change

University of Virginia Library

July 13-15, 2011

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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:

<u>Actions</u>:

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