

Assessment to Innovation: Creating a Model for Interdisciplinary Collaboration and Knowledge Sharing Online

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Introduction

In this paper, we discuss the processes of user assessment that have contributed to the development of EthicShare, an online research environment for ethics scholars. We note a number of studies undertaken in the last decade that have reshaped how libraries think about user behaviors, how they go about analyzing the needs of their own scholars and students, and how they respond to challenges faced by researcher through innovative development. We also examine the assessment methods developed at the University of Minnesota through multiple projects, including EthicShare. We explore the adaptation of the conceptual framework we've used to analyze findings. We also consider how to move from results to social web development opportunities through an iterative design process that engages library users in multiple feedback loops such as beta testing, usability testing, and presentations to targeted scholarly communities.

Recent Assessment Trends Within Libraries

When Wendy Pradt Lougee wrote and presented "Diffuse Libraries" in 2002, very little research had been done on how humanities and social sciences

scholars conducted their work. While Lougee was proposing the concept that "research libraries support all sectors of academic life," many details of a scholar's academic life were not fully known.¹ Lougee's premise that "libraries are becoming more deeply engaged in the creation and dissemination of knowledge and are becoming essential collaborators with the other stakeholders in these activities" required that libraries begin to understand scholarly behavior on a more intimate level. Questions surrounding researchers' methods and processes were plentiful. Differences between disciplines were assumed, but not well understood. Since that time, many assessment projects have attempted to identify the patterns and habits of scholarly behavior.

The 2001 Digital Library Federation report, "Scholarly Work in the Humanities and the Evolving Information Environment" that reported on the Scholarly Work in the Humanities Project at the University of Illinois at Urbana-Champaign recognized how the rapidly changing academic environment affected how researchers used information and the library. The authors wrote, "Assessing and responding to those changes is essential for the academic library so

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that it may continue in support of the scholarly mission.”² The stated goal of this project was that through the “analysis of scholars’ practices we can conceptualize the type of information environment that would best support their activities and begin to clarify priorities for the development of rich information environments that are responsive to the context of scholarly work.”³

The innovative methodology used in this study to gather data proved to be a foundational model for many studies that have followed. The authors stayed clear of traditional surveys and instead focused on the combination of semi-structured interviews combined with a small sample of case studies. The findings illustrated a new view of humanities scholars. This study surfaced the fact that humanities research is more collaborative in nature than generally perceived. While writing and publishing is generally solitary, the discovery of materials and ideas is extremely social. The researchers found that electronic access to materials influences scholars’ perceptions of the importance of the resource: the greater the barrier to the material, the less likely it is to be used; items available in full text online were deemed most valuable by nearly all researchers studied. Lastly, the breadth of material types used by humanities scholars was significant. This variety of materials illuminated the growing problem of libraries currently making resources available in separate, exclusive “silos” rather than allowing researchers to search across multiple databases simultaneously, which is how researchers would prefer to work, especially given the rise of interdisciplinary research.

Building upon this work, Nancy Foster and Susan Gibbons at the University of Rochester embarked upon an anthropological study of scholarly behavior, “Understanding Faculty to Improve Content Recruitment for Institutional Repositories” (2005).⁴ Though the stated goal of their study was to identify factors that would encourage faculty to participate in an institutional repository, the study of research behaviors was broad and holistic. Similar to the previous study, the methodology used by the researchers broke new ground. It was described as a “work-practice study, a method of fine-grained observation and documentation of people at work based on traditional anthropological participant observation”. Videotaped interview/observation sessions, for example, were analyzed in a variety of ways:

Team members read as many transcripts and viewed as many videos as time allowed. The

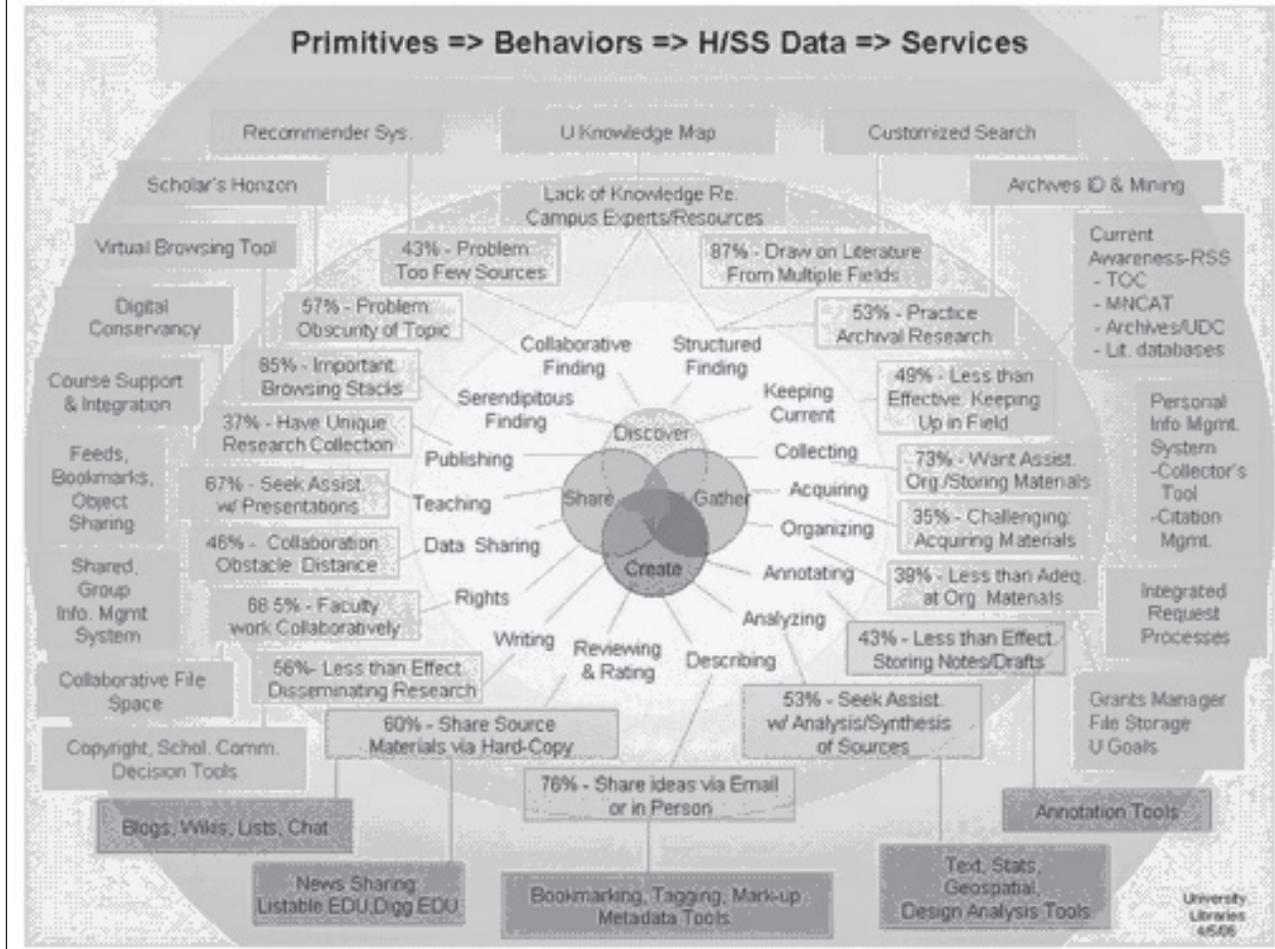
anthropologist conducted a variety of analyses based on the field data. At some meetings, the whole team analyzed the transcripts together, usually in the context of discussing research questions or performing an activity. For example, we used interview transcripts to create storyboards of the research cycle from concept to publication for three faculty members, and then returned to the faculty members to discuss and improve their storyboards. (Foster and Gibbons)

This innovative approach to examining the research processes of scholars led to some interesting discoveries, including that scholars most want to be able to work with co-authors; make their own work available to others; have easy access to other people’s work; keep up in their fields; organize their materials according to their own scheme; reduce chaos or at least not add to it; and not be any busier.

Similar findings were discovered when the authors of this article conducted a study in 2005 of Humanities and Social Sciences scholars at the University of Minnesota Libraries. Using the previous studies as models, the methodology of this study was a combination of interviews, focus groups, discipline studies and large scale surveying tools. Several major themes were discovered, including that researchers work in diverse locations and that interdisciplinary interests of scholars meant they used a wide variety of resources. Researchers across disciplines had a strong interest in digital resources, but methods learned in “traditional” contexts were not easily transferred to digital context. Further, researchers experienced particular problems in managing, organizing and preserving the resources used for research. Collaboration was seen as increasingly interesting and necessary even, but it was challenged by time/space, distance. Lastly, researchers have unique collections, that hold value, to be shared, but the means for doing so were not apparent or easy.

While the findings of these assessment projects clearly highlighted many areas that were ripe for improvement, creating a system for analysis to identify and select solutions was challenging. The work by John Unsworth on “scholarly primitives” was extremely useful as a framework for grouping shared activities of scholars.⁵ By identifying core behaviors that spanned disciplines, as well as the shared challenges that researchers confronted, the UMN assessment team

Figure 1. Primitives Framework



<http://www.lib.umn.edu/about/mellon/mellonslidex800.jpg>

used an analytical framework to build relationships between the assessment findings and opportunities for development and improvement by the Libraries.

Generally, libraries have often created tools and services based on perceived needs, but not necessarily on assessed needs. Systematic assessment projects can lead to more effective, and more ambitious, responses by libraries as they attempt to address the challenges experienced by scholars. Digital environments are one such response, as they aim to bring together traditional research needs with innovative tools and services that facilitate research, collaboration, and communication through social web technologies.

What is EthicShare?

EthicShare is a response to the stated need by bioethics scholars for an online environment that brings together a rich but filtered database of research ma-

terials customized for ethics scholarship with an accessible platform for collaboration and communication. The goal of EthicShare is to create a discovery environment that models and facilitates new forms of community engagement and exchange for ethics scholars—from bioethics to practical and applied ethics.

The resulting pilot, currently under development with support from the Andrew W. Mellon Foundation, features a diverse database of literature, with an initial focus on bioethics. EthicShare is both an interdisciplinary and multi-institutional database of resources harvested from scholarly indexes, OAI sources, government documents, RSS feeds and monograph record sources and a model for interdisciplinary collaboration in an online setting. It strives to leverage social web technologies to facilitate discovery and sharing in a manner appropriate

to a scholarly environment. EthicShare aims to address many of challenges researchers face in the 21st century: the overwhelming amount of information available and the difficulty of keeping up with a field; the need to master new areas of research for interdisciplinary projects; and the desire to work collaboratively in new ways. The project starts with the need for a high quality bibliographic database for scholars that brings together the disparate sources and materials used in bioethics research: scholarly and popular press articles, multimedia objects, pre-prints, and archival documents from fields as diverse as medicine, biology, philosophy, law, religion, public health, public policy, gender studies, environmental studies, and beyond.

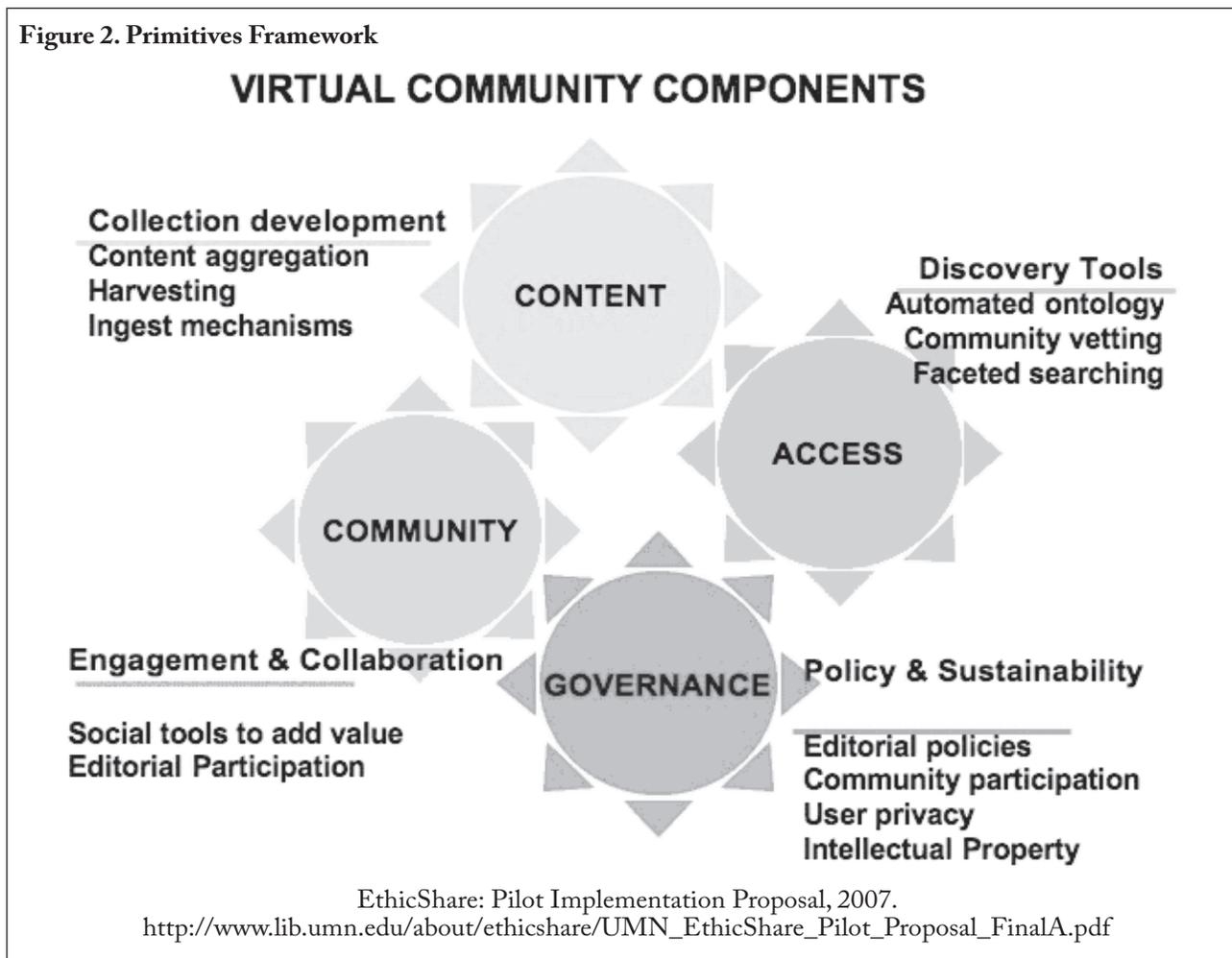
As a research and collaboration site, EthicShare users can:

- Search and refine.
- Save and organize citations and search histories.

- Tag citations, labeling them in ways that are useful to individual users and other users of the site.
- Join or create groups to share citations, discuss ideas, upload files, and work collaboratively. Groups can be private or public.
 - Contribute content to the database.
 - Import citations into Endnote, RefWorks, or word documents.
 - Rate and comment on literature, issues, or other aspects of the site.
 - Find information about upcoming events, news, and deadlines the field of ethics.

In 2004, the Scholarly Communications Institute hosted by the University of Virginia engaged faculty, administrators, and librarians from participating institutions to examine issues surrounding new online possibilities for discourse and exchange. This dialogue resulted in a proposal prepared by the University of Minnesota Center for Bioethics and Libraries, and submitted to the Council on Library and Information

Figure 2. Primitives Framework



Resources (CLIR) to support the development of a prototype of EthicShare, a sustainable online research and collaboration environment for the practical ethics community. Creating a partnership between all stakeholders—representing the institution’s priorities, the scholars’ needs and the technology development skills—was critical to the momentum and engagement of the project.

The original partners in the University of Minnesota’s efforts—senior practical ethics scholars from Georgetown University; Indiana University-Bloomington; Indiana University-Purdue University, Indianapolis; and the University of Virginia—envisioned a multi-phase effort, beginning with a foundational planning grant to specify the requirements for such an environment.

This work comes in the context of the movement towards building the necessary cyberinfrastructure support for virtual communities in the humanities, social sciences, and the sciences—all fields that play a role in ethics scholarship.⁶ Recent interests of ACLS, NIH, and NSF have included strategies to address the needs of distributed scholars who interact with information and data resources, engage in discourse, and cumulate valued resources for future scholarship. The EthicShare project exemplifies an attempt to build this type of virtual community for a discipline whose roots are in the humanities, but whose impact and research interests are found in a broad array of domains.

The conceptual framework of a virtual community for ethics scholars requires high quality content and resources; effective access and discovery systems; mechanisms for collaboration and community engagement; and governance structures that support sustainable models of collection building, technological development, and community participation. The framework as a whole creates a potential model for other scholarly communities.

A successful virtual community requires a model for sustainability. Building on work during the planning phase, the EthicShare team has come to view sustainability from the dual perspective of maintaining the technology infrastructure and environment (i.e., the repository and associated functions/services), and sustaining the collaborative activity that gives the discovery environment its unique and pioneering character (i.e., an engaged community with commitment to participate and contribute to the environment).

The iterative design process applied to the implementation of EthicShare involves community members in the design and testing of the environment. Developing strategies for harnessing user expertise and creating incentives for engagement is a key focus of the pilot implementation phase of EthicShare. The importance of introducing and testing the social web technologies is important also because these tools currently have a low adoption rate with humanities scholars and we want to ensure that we are creating the most effective mechanisms as possible.

How to Build Community? Framing Questions

EthicShare user research is twofold in its objectives: the first, to better understand the needs of the scholarly community for which the website is intended: academics—undergraduate and graduate students, and faculty working in the fields of practical and applied ethics. The second is to study the mechanisms that encourage community participation in an online environment devoted to scholarly research and collaboration.

Understanding a community is vital when developing tools and services for its members. Throughout the EthicShare project, we have learned about the community’s processes and methods, asked for their needs for new tools and services, asked their opinions about the functionality of our site’s interface and features for the purpose of including them in the work we are doing; we have followed design principles that encourage participation; and we have developed “experimental design tests” that employ different techniques in order to determine the procedures most effectively encourage site adoption and use. Throughout this work assessment has not only been a tool for learning, but also for engagement and recruitment.

Engaging the practical ethics community has been key to EthicShare’s planning and development activities. The EthicShare team attempted to gain a deeper understanding of the fields of practical and applied ethics by continuous contact with scholars through assessment, iterative testing, and presentations to key academic societies. The team has sought insight into numerous questions including the geography of the fields of practical and applied ethics, scholarly research practices and challenges of the community, and the incentives that would encourage a community of scholars to participate in new forms of research

and communication. We ask: What challenges do scholars face when conducting their research? How do scholars do their research in an environment of distributed resources? What materials do they use, organize, share, and what services and tools are useful or lacking? What are the differences or commonalities among disciplines, and what legacy behaviors are giving way to new dependencies on technology? How do scholars communicate and are their methods adequate in a world of new modes of communication? Underneath these questions is another guiding interest: Can the possibilities demonstrated by social networking enhance scholarly activity and research, and will scholars adopt social networking practices in a scholarly context?

The questions we began with, tailored to the research interests and tasks of faculty and graduate students, generally fell into one of four overlapping categories of analysis, or primitives, to borrow from John Unsworth's term for categories of core behaviors that are shared across disciplines: discovery (how researchers identify and find research materials, the types of resources they seek, how scholars keep current with their field/fields of interest); gathering (how researchers organize, preserve, and re-find research materials and data); creating (activities such as writing, preparing lectures and presentations, and publications); and sharing (teaching, scholarly communication, informal and formal presentations of research).⁷ This analytical framework of primitives allowed the EthicShare team to examine findings according to major functional components of the EthicShare site, such as literature database requirements, tools and features that would enhance usability, as well as technical infrastructure needs that would enable users to communicate regardless of disciplinary background, home institution systems, and even countries of origin.

To address the second aspect of our assessment—what motivates scholarly users to participate in a social research site, we relied on current research for identifying incentives to participation. From Ames and Naaman's research it is clear that users more readily engage in low-barrier applications that allow them to organize materials for personal reasons (versus being motivated to help others).⁸ Evolutionary psychology research also suggests that people are more apt to participate in a community venture when they gain status (e.g. they are given public credit for their efforts) or when their altruistic efforts are reciprocal (e.g. their

recommendations to others result in return recommendations).⁹

Computer scientist Jonathan Grudin explains that collaborative sites have different pitfalls than applications developed for individuals. Collaborative sites require that those who benefit from the application must not be different from those who work to support it—that is, the interface must clearly demonstrate how people are using the site. One method of doing this is to display the number of times an article has been shared, saved, and discussed.¹⁰ At the same time, user effort must be reduced to an absolute minimum, thus privileging low barrier forms of participation that fit intuitively into a user's normal workflow.

Assessment: Methods, Findings, and Development Opportunities

The EthicShare team has worked to capture attitudes, needs, and research challenges of the bioethics community through site visits at all EthicShare partner institutions as well as paper and online survey of over 90 bioethics faculty members, research associates, postdocs, and graduate students. The purpose of the site visits and survey was to gauge bioethics scholars' attitudes about existing content, systems for information retrieval, social networking features, community participation within online environments, and to elicit overall feedback on EthicShare project goals. Scholars were shown representative websites that use social tools to engage user participation through commenting, rating, sharing, and submission of content. Scholars were asked to comment on specific features and discuss their own research and communication needs.

The survey, distributed to site visit participants as well as faculty and graduate students around the country (identified by their membership in the Association of Bioethics Program Directors and select graduate programs), asked scholars to rank the types of research materials they depend on most, rate the importance of various site features (folders for organizing materials, discussion space, private group space, the ability to format bibliographies, the ability to submit resources and link to full text, and more), and comment on what would motivate them to participate in social aspects of the site. To gauge attitudes about site sustainability and individual participation, we asked scholars to address the question of whom should have the responsibility of adding content, commentary and

ratings to the site—all site users, paid site staff, or select “experts” from the field. After the planning phase of EthicShare, the user survey has been customized to capture needs and attitudes of scholars beyond the area of bioethics, notably in the area of business ethics and scholars and policy makers working in the area of health care priorities.

Like many fields, applied ethics is highly interdisciplinary, crossing the sciences, humanities, and social sciences. Many scholars with disciplinary training in the humanities and social sciences, such as philosophy, religion, journalism, business and economics, public policy, or sociology, find themselves most active in scientific fields such as public health and health policy, medicine, and environmental studies. For all of these fields, we determined what sources scholars depend on most, both in terms of general material types (journal articles, books, government documents, gray literature, popular literature, digital objects, multimedia sources, etc.) and the specific research databases and journal titles that represent the core literature of ethics’ various fields. We investigated research practices and attitudes about online research and communication tools, and surveyed scholars about their familiarity with and attitudes towards online trends, tools, and features.

Briefly, scholars generally identified the following as critical to the EthicShare site:

- The ability to identify high quality materials
- Comprehensive access to all material types (full text)
- Access to materials in all related academic fields
- Space for community discussion, exchange, commentary
- Ability to have private work space
- Ability to work with colleagues regardless of institutional home

Social features rated higher in importance among graduate student than among faculty.¹¹

The findings of the survey and site visits demonstrate one of the key challenges and even the limitations of assessment: user assessments, when viewed from the perspective of developing and encouraging new ways of doing things, can rarely identify the full range of possibilities that users might entertain when confronted with new forms of research and communication. The relatively low interest among ethics scholars in explicit social tools that are common in many online environments, for example, does not

necessarily mean that such tools, when contextualized and offered in an intuitive way, would not be highly adapted among the same group of scholars. Assessment can provide libraries and development teams with a clear picture of how scholars work *now*, but the imaginative leaps of how scholars will work a year from now, or five years from now, will not be revealed fully by assessment alone.

It is for this reason that EthicShare site development has depended heavily on user feedback throughout the process, not just during the initial planning phase when we assessed site requirements according to users. EthicShare user testing involves regular beta testing of site features. Testers are drawn from a pool of bioethics scholars from the University of Minnesota and around North America. Additionally, the EthicShare site has been tested intensively in the University of Minnesota Usability Lab, and a second round of testing is scheduled. Large-scale feedback cycles will also be employed in which 150-200 bioethics scholars and graduate students nationwide are asked to view the website, test features, and provide feedback.

To achieve the second research objective, we have formulated an experimental design process for testing the most effective means of introducing and encouraging use of EthicShare’s collaborative and community-based features. As a site that is built around easy-to-use social networking technologies that help users navigate a rich research site, EthicShare will test how social web tools can foster community and engagement. We will develop mechanisms to motivate and measure different forms of community participation, from submitting comments, to evaluating the quality of a resource, to contributing content.

Conclusion

As an interdisciplinary project, and a multi-institutional partnership, EthicShare seeks to provide a low barrier, easy-to-use research and community environment that meets multiple scholarly needs—those that have been explicitly expressed, such as a rich database or a way to communicate effectively with colleagues in a shared online space—and those that are implicit—such as providing tags as a way to organize and re-find content, even for scholars who may not be familiar with the convention of tagging. Continuous assessment, as well as the lessons from studies undertaken by other institutions, has been a consistent and

valuable tool for deducing the requirements of a website that will be free and open to all users, but that is aimed specifically towards a group of scholars who are trained in very disparate fields and who work all over the country and the world.

EthicShare attempts to balance the needs of a somewhat traditional scholarly community with the possibilities of an online environment that is bolstered and sustained by community participation and social networking features. Assessment and user feedback not only drive the design process, the business-model development, and the ultimate scope of project (to fulfill basic research and communication needs of busy academics), but also mitigates the risks concomitant to any development project that seeks to introduce new and innovative features into well-trodden work flows.

Notes

1. Wendy Lougee. *Diffuse Libraries: Emergent Roles for the Research Library in the Digital Age*. Council on Library and Information Resources, August 2002. <http://www.clir.org/pubs/reports/pub108/contents.html>.

2. Digital Library Federation. "Scholarly Work in the Humanities and the Evolving Information Environment," 2001, 6.

3. Digital Library Federation, 2001, 2.

4. Nancy Fried Foster and Susan Gibbons. "Understanding Faculty to Improve Content Recruitment for Institutional Repositories." *DLib* 11:1, 2005. <http://www.dlib.org/dlib/january05/foster/01foster.html>.

5. John Unsworth. "Scholarly Primitives: What Methods Do Humanities Researchers Have in Common and How Might Our Tools Reflect This?" "Humanities Computing, Formal Methods, Experimental Practice" Symposium, Kings College, London, May 13, 2000. <http://jefferson.village.virginia.edu/~jmu2m/Kings.5-00/primitives.html>.

6. Marlo Welshons, ed. *Our Cultural Commonwealth: The Report of the American Council of Learned Societies Commission on Cyberinfrastructure for the Humanities and Social Sciences*. American Council of Learned Societies, 2006.

7. John Unsworth, 2000.

8. Morgan Ames and Mor Naaman. "Why We Tag: Motivations for Annotation in Mobile and Online Media," 2007. <http://www.stanford.edu/~morganya/research/chi2007-tagging.pdf>.

9. Olly Wright. "Evolutionary Psychology as a Basis for Ethical Design: Virtual Status and Ubiquitous Altru-

ism," *Bulletin of American Society for Information Science and Technology*, June/July 2007. <http://www.asis.org/Bulletin/Jun-07/Wright.pdf>.

10. Jonathan Grudin. "Why CSCW Applications Fail: Problems in the Design and Evaluation of Organizational Interfaces," *Proceedings of the 1988 ACM conference on Computer-supported cooperative work, 1988*.

11. A more detailed discussion of EthicShare assessment findings can be found in the EthicShare report from its initial planning phase (2006-2007) and the proposal for EthicShare's pilot implementation (2007-2009): <http://www.lib.umn.edu/about/ethicshare/docs.html>.