Summary of Proposal to the A.W. Mellon Foundation

Assessing the Future Landscape of Scholarly Communication: An In-depth Study of Faculty Needs and Ways of Meeting Them

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Abstract

There have been studies around such specific issues as the costs of starting journals and the finances of university presses, but there has not yet been a bigger-picture, comprehensive analysis from the point of view of the university and how its various stakeholders, most notably faculty, value traditional and emerging forms of scholarly communication. The Center for Studies in Higher Education (CSHE) therefore proposes a research project that will have as its focus understanding faculty needs and desires for *in-progress* scholarly communication (i.e., forms of communication employed as research is being executed) as well as archival publication. A broader understanding of the full array of activities related to the scholarly communication lifecycle is needed if we are to assess with any accuracy the future communication and publication landscape in universities.

Our proposed research is an in-depth analysis of the perceived scholarly communication needs of six to eight academic disciplines, each of which represent different sets of needs and is representative of disciplines or sub-disciplines with similar needs. We will select disciplines based on both past and future interviews with faculty and other stakeholders and (1) examine the needs of scholarly researchers for both final and in-progress communication, and (2) determine how those needs are likely to influence future scenarios for a discipline.

Our primary methodology will be in-depth interviews with faculty and interviews with persons responsible for implementing innovative scholarly publishing initiatives, including librarians and IT professionals. We will combine the results of those interviews with our knowledge from the planning study (online at http://cshe.berkeley.edu/publications/docs/scholarlycomm_report.pdf), ongoing background research, additional interviews, and results of associated surveys and other activities.

The research project's deliverables will be:
(1) A typology of communication models and practices,
(2) A descriptive analysis that identifies faculty needs for scholarly communication and publication,
(3) Predicted future scenarios for the select disciplines useful to those responsible for planning,
(4) "Cost/benefit" analyses, broadly defined, for present and candidate future scenarios, and
(5) Determinations of where current and possible future responsibilities for meeting costs reside.

Introduction and Background

Many opportunities and concerns are at play in the field of scholarly communication. These result from capabilities afforded by new technologies, pressures associated with the purchasing power of library budgets, marginal operations by university presses, and the pricing structures of the publishing industry. In a recently completed planning study supported by the Andrew W. Mellon Foundation, we at the Center for Studies in Higher Education (CSHE) postulated that faculty values, such as those associated with developing a name within one's field and advancement within one's institution, were major factors complicating the migration of authors to newer means of publication. We also posited that these values would likely affect the ultimate viability of new models of publication. (The entire report, *Final Report for Planning Grant, Scholarly Communication: Academic Values and Sustainable Models,* is available upon request and online at http://cshe.berkeley.edu/publications/docs/scholarlycomm_report.pdf.)

The motivation for our planning project was to provide a nuanced and insightful analysis of the roles that universities and faculty do and can play in the resolution of the perceived "crisis in scholarly communication." Many of those involved in supporting new publishing and communication ventures see "the lack of willingness of the faculty to change" as a key barrier to moving to more cost-effective publishing models in an environment of escalating costs and constrained resources. Although limited in scope, the results of the planning study strongly confirm the importance of faculty values and the vital role of peer review in faculty attitudes and actual publishing behavior.

Our planning study further reinforced our belief that, in order to be attracted to newer forms of communication, faculty need to view them as useful to their own careers—both in making a name for themselves within their field and in gaining advancement at their university. Although some faculty are at least somewhat aware of institutional cost, it is not a motivating factor for most. Therefore, we suggest that there is value in a deeper analysis of faculty needs that is largely independent of a strict economic analysis, although ultimately it is necessary to consider both what faculty want and what will work economically and institutionally. Faculty values and reward systems will still figure prominently in future data collection and analyses. We propose, however, to expand our investigations to capture additional factors that might affect faculty choice, as both barriers and enablers to innovative means. Our reasoning is explained in more detail below.

Selected Findings and Inferences from Planning Study

As the result of our examination of the ways in which value systems in five disciplinary areas affect scholarly publication and communication practices, we reached the following conclusions that have motivated the present proposal:

- Peer review is the coin of the realm. It is the value system that supports assessment and the perceived quality of research, and peer review is deeply embedded in the academic research community.

- There is presently a somewhat dichotomous situation where electronic forms of print publications are used heavily and even nearly exclusively by performers of research in many fields (in the sciences, particularly), but perceptions and realities of the reward system keep faculty strongly adhered to conventional, high-stature print publications as the means of record for reporting research and having it institutionally evaluated.

- There has been a trend over time whereby there is greater reliance on indirect measures of the quality of a research product. Measures such as the perceived quality of a journal or university-press publisher, "impact" factors,[1] selectivity of a journal or press, whether or not a paper was invited, etc., have been used as markers or even surrogates of quality by reviewers, in addition to direct assessments of quality by those knowledgeable in the field.[2]

- While both are critically important to one's career, the means of publication and communication for gaining advancement within the institution differ significantly from those for making one's name within a discipline. The former depends almost exclusively[3] upon final, fully peer-reviewed archival publication, whereas the latter is dependent upon both archival publication and various forms of communication that occur while the research is underway. The latter, which we call *in-progress* communication, is more fluid and oriented toward partial results, meetings, conferences and other information exchanges, both formal and informal, with other researchers during the course of the research. Such *in-progress* communication fulfills needs such as (1) gaining the critical thoughts of others while one's research is in progress, (2) "staking claim"

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[1] The so-called Impact Factor is a measure of the citation frequency of papers in journals and is thereby equated by some to the stature and presumably the prestige of the journal. See R. Monastersky, "The Number That's Devouring Science," *Chronicle of Higher Education*, October 14, 2005. http://chronicle.com/weekly/v52/i08/08a01201.htm. *ibid*., "Impact Factors Run into Competition," http://chronicle.com/weekly/v52/i08/08a01701.htm.
[2] See for example *Nature's* peer review debate (2006) online at http://www.nature.com/nature/peerreview/debate/index.html
[3] The exception is letters from peers at other institutions, which are often used for promotions and other special advancements, and which tend to reflect views formed through in-progress communication as well as archival publication.

to one's activity and accomplishments in an area, and (3) sparking thoughts and new ideas as a product of the discussion.

- In-progress communication does not substitute for the need for final, archival presentation and dissemination of research results. They serve different purposes and needs. Both are important.

- There is much more experimentation with regard to means of in-progress communication, where single means of publication and communication are not fixed so deeply in values and tradition as they are for final, archival publication.

- From an institutional standpoint, there are looming questions about how to support faculty in their scholarly practice. Our interviews suggested that at UC Berkeley there are currently few, if any, mechanisms or structures that support storing, archiving, and sharing data and other significant products of research. These types of products are adjuncts to formal publication and/or are created while the research is in progress before archival publication. We believe that this is true of other institutions as well, except perhaps in a few fields.[4]

Rationale for Proposed Research

There have been studies around such specific issues as the costs of starting journals and the finances of university presses, but there has not yet been a bigger-picture, comprehensive analysis from the point of view of the university and how its various stakeholders, most notably faculty, value traditional and emerging forms of scholarly communication. Research that explores the emergence of alternative scholarly communication models in a select number of academic disciplines could provide such an analysis. We therefore propose a research project that will have as its focus understanding faculty needs and desires for *in-progress* scholarly communication, as well as archival publication. (In-progress communication is defined more fully below.) A broader understanding of the full array of activities related to the scholarly communication lifecycle is needed if we are to assess with any accuracy the future communication and publication landscape in universities.

The following are among the questions driving our work: What will scholars want to do in their research, and with their research results, and what new forms of communication do or do not support those desires? How will scholars want to disseminate and receive input on their work at various life-cycle stages? What are the emerging trends? What are the scope and depth of pent-up demand for new models by various sectors/disciplines? How do institutions and other stakeholders support these faculty needs?

There are and will be two types of scholarly communication and publication needs: in-progress communication and publication:

- **In-progress communication.** i.e., forms of communication employed as research is being executed. This is currently typified by conferences, seminar/symposia visits, use of personal websites, conversations through email (both one-to-one and through email networks), personal websites, online conversation, informal contacts, and publication of datasets. Typical examples in the sciences and some social sciences are the Gordon Research Conferences, which encourage informal discussion and do not involve publication at all.

- **Publication,** i.e., recording and archiving the final results of a research project. In the sciences, this presently takes the form of journal articles and final project reports. In the humanities, it takes primarily the form of books, monographs, and works of art and performance.

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[4] Lost in a Sea of Science Data, *Chronicle of Higher Education,* June 23, 2006. http://chronicle.com/weekly/v52/i42/42a03501.htm. See also Lynch and Lippincott, 2005.

Peer review is so valued and respected that it should be considered as a given for archival publication. With different modes of publication, however, different approaches to peer review are possible, encompassing such sequences as the use of a preprint server, followed by informal, interactive peer review, then publishing to a postprint server or working paper, which then is reviewed in public or private discussion. Formal peer review is less of a factor for in-progress communication because communication is usually, by design, informal.

Results from our planning project suggest that examinations of how new media should and will affect scholarly communication and publication must recognize that, for the foreseeable future, the values surrounding final archival publication are deep and relatively inflexible in research universities. On the other hand, what scholars value and want will eventually become accepted practice. This is a much more realistic way of looking at issues than is devising models and modes of communication because of their cost efficiencies or other non-research criteria and then trying to draw scholars to them. Approaches that try to "move" faculty and deeply embedded value systems directly toward new forms of archival, "final" publication are destined largely to failure in the short-term. From our perspective, a more promising route is to (1) examine the needs of scholarly researchers for both final and in-progress communication, and (2) determine how those needs are likely to influence future scenarios in a range of disciplinary areas.

In summary, we suggest that more innovation does and will occur first in in-progress communication than in final archival publication. One can foresee a scenario where useful and effective innovations in in-progress communication will eventually serve as drivers for improvements in final archival publication. It is therefore worthwhile to gain deeper insights into the needs, motives, and new capabilities within in-progress communication as well as for final, archival publication.

Overview of the Project

Research Design: Goals, Research Questions, Methods

Our proposed research is an in-depth analysis of the perceived scholarly communication needs of six to eight academic disciplines, each of which represent different sets of needs and is representative of disciplines or sub-disciplines with similar needs. We will select disciplines based on both past and future interviews with faculty and other stakeholders.

Overarching Goals

The goals of the proposed project are to map and assess systematically:

- the current and evolving scholarly communication needs of researchers in selected representative academic fields. Our focus will be on assessing scholars' attitudes and needs as both authors and users of research results,

- the capabilities of various traditional and emerging models of scholarly communication and publication for meeting those needs, and

- the likely future scenarios for scholarly communication (by field), and how those scenarios can be best supported by institutional organizations and units.

Research Questions

Our research activities will be guided by these five overarching questions:

1. What are the fundamentally different disciplinary areas of scholarship with regard to publication needs? Criteria for answering this question include, *inter alia*,

    i.   What is the size of a quantum of output (e.g., 500 words, 5 pages, book chapter, book, multi-volume, lines of code) and what extent of analysis and discussion is involved (e.g., in present terms, book vs. article vs. short communication)?

    ii. How fast-moving is the field? Extremes are molecular biology on the very fast end, and history and literature on the "time doesn't really matter" end.

    iii. How well is the field funded in terms of research grants? This determines how much funding researchers themselves have available to spend on communication and publication. Extremes are molecular biologists and many other sciences who have copious research funds, while most humanities have few, if any.

    iv. How many people are involved in the field (i.e., fields with tens of thousands of actors vs. fields with 100 actors or fewer)?

    v.   To what extent are non-textual components, such as very large databases, software, video, audio, etc., an issue?

    vi. What is the relative value of "resource development" (large data sets, literary corpora, etc.) and non-traditional forms of publication (e.g., conferences, working papers, blogs, wikis) to scholarly practice?

    vii. To what extent is the research product multi-dimensional and/or dynamic? For example, in architecture there is still no way of experiencing a building in its complete environment other than going there, but that may change with the advent of more sophisticated virtual-reality environments.

    viii. Is there evidence that social computing models (e.g., such as those epitomized by Wikipedia-type distributed authoring, html tagging, etc.) can function in specialized fields? What is the role of more prosaic tools such as email networks?

    ix. How is the agenda of a field set? How does a field accommodate change and how does this differ among fields?

2. For the different disciplinary areas of scholarship, what range of information types and sources does a researcher need or want to access: (a) while doing research and (b) communicating his/her research (both in-progress communication and archival publication, as defined above)?

3. What are the characteristics of current and evolving means and/or models of communication and publication that may meet the needs for each of the identified disciplinary areas?

4. What is the relative importance and impact of each of the means and models in #3 above, considering issues such as:

    i.   The organizational structures both within institutions and among institutions that could serve to facilitate the communication/publication needs perceived by faculty members.

    ii. Whether the ultimate costs—broadly defined as financial but to include time, out of pocket expenses, opportunity costs, etc.—for participants in the process are less or more compared to current models and means.

    iii. The extent to which approaches are, or are not, scalable in a practical fashion.

iv. The likelihood and viability of paths for initiation and transition to new means of communication and publication.

1. What are the sources and nature of support for innovators and initiators?

2. What are the divisions of labor and the likely professional trajectories of those who lead innovative efforts?

3. What are the processes of transition from the present organizations and structures to the new ones, what possible costs are there for the transition, and how might those costs be met, and by whom?

v. Copyright concerns of the various parties involved.

vi. Legal issues that may be involved.

vii. Likely moves and reactions by established players, e.g., publishers, librarians, authors.

viii. New structures/organizations that are needed to ensure sustainability.

5. With regard to potentially innovative means and models, what incentives, institutional support efforts, and/or new organizational structures, if any, would be needed to facilitate the development of approaches that are attractive and most practical for scholars in a discipline

Steering Committee

As was the case for our planning study, this project will be advised by a steering committee, the membership of which can be found at http://cshe.berkeley.edu/research/scholarlycommunication. This committee will meet at least three times per year and will be contacted by email with issues at appropriate points in between. The steering committee includes faculty and other persons active and well recognized in a wide variety of activities bearing upon scholarly communication and this project.

Overview of Methodology

In consultation with our steering committee and others, as well as through our planning results, we will identify six to eight broad disciplinary areas that have common needs, and then choose single representative disciplines within each of the areas that can provide a rich resource of relevant data.

Interviews

Our primary methodology will be in-depth interviews with faculty, supplemented by interviews with persons responsible for implementing innovative scholarly publishing initiatives, including librarians and IT professionals. We will combine the results of those interviews with our knowledge from the planning study, ongoing background research, additional interviews, and results of associated surveys and other activities[5] to identify current and evolving scholarly communication needs of researchers in selected disciplinary areas. Our steering committee and expanding network of scholars and practitioners will continue to be a source of information and guidance.

Protocols

We propose developing an interview protocol that will explore: how faculty use and value in-progress communication; how it relates to needs and values for archival publication; what needs they envision for

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[5] We are aware currently of two relevant studies in the design phases: Ithaka and the California Digital Library. As well, the Scholarly Communication Institute has brought scholars in certain disciplines together to discuss scholarly communication needs. We will keep abreast of other such efforts and interact with them as appropriate.

types, timing, and means of in-progress communication and archival publication; and the extent to which in-progress communication influences reputations *vis-à-vis* final archival publication. The focus will be on assessing scholars' attitudes and needs both as authors and consumers of research results. As we found in our planning grant, consumer needs are an additional means to identify emerging modes of scholarly communication. We will distinguish between perceptions of new forms of communication (e.g., blogs, wikis, online conferences, etc.) and the need for databases and other intensive resource development.

Sample

Our sample of informants will be driven by our choice of disciplines. We will not limit ourselves to any one institution, although we will begin exploration from the base of UC Berkeley. We will then proceed to wherever the dynamic of scholarly communication in the discipline takes us. For example, in English-language Literature (referred to throughout as simply "English" or "ELL"), we might begin extending the interview base we created in the planning grant by adding more faculty informants in English at UC Berkeley to assess basic needs and knowledge of innovative practice, and seek opinions about why UC Berkeley faculty are or are not involved in such efforts. We know, based on our planning research, however, that much innovation in a field will reside outside of any one institution. Therefore, we will include in our sample faculty and others at those institutions where innovation seems to be taking hold (e.g., in the case of English-language Literature, the University of Virginia is one institution that is an obvious choice for investigation). We anticipate that approximately three institutions for each discipline will be appropriate. This approach will allow a more in-depth understanding of the array of factors contributing to successful or unsuccessful faculty innovation in any one field, while avoiding bias that might arise because of concentration on any one institution.

Our protocol will include means to assess the organizational and structural means of implementing new models through an institution, or in a discipline. We recognize that institutions can be new ones as well as existing ones. (The point here is as much to assess what sorts of institutions are implementing models with more or less success, be it at the single- or multi-discipline level.) We will identify candidate organizational structures for more in-depth collection and analysis of data through interviews and basic web research. Web research provides a relatively quick, if imperfect, method to assess individual and organizational membership in initiatives (e.g., acknowledgements of collaborations and partnerships, organizational charts, online proposals describing various roles in workplans, and the history and funding of an initiative or organization, etc.). Web research also allows the review of university organizational charts and structures that have been proposed, and/or implemented. To assess the locus of responsibility for various stages in the lifecycle, and to determine capabilities of various current and emerging models of scholarly communication and publication for meeting the scholarly needs that we identify, we will conduct additional interviews as needed with persons and/or groups, such as librarians and IT professionals, whom we or informants identify as being involved in supporting faculty scholarly practice.

We intend to address the question of incentives through our knowledge of faculty and universities, augmented by the results of past and future interviews with faculty, and appropriate chairs and deans, on that subject. Specifically, we will concentrate a series of questions for faculty and administrators on what, if any, incentives are in place for innovation in in-progress communication and whether their presence or absence presents obstacles or are neutral to innovation. This will allow us to make some assessment of whether, and in what institutions, reward and advancement practices may be shifting with faculty activity, or are indifferent or hostile to such innovations. For example, we would ask department chairs at the institutions we focus on about the extent to which arguments based upon in-progress communication are entering external peer-review letters and any other aspects of promotion cases, if at all. Also, what are the relationships between archival publication and in-progress communication from the point of view of deans and chairs? How does the advancement process in fast-moving fields such as computer science and molecular biology take into account in-progress communication?

Teasing Out Definitions and Vocabulary

Meaningful comparison between and among different types of scholarly communication requires some criteria for distinguishing key characteristics. We posit the following requirements for understanding the complexities:

- Identification of new and emerging forms of scholarly communication requires a means for distinguishing them that does not emphasize existing and well-known forms (e.g., journal articles, monographs) and obscure the nascent ones. Indeed, the project hypothesizes that the ability to characterize new and emerging forms of scholarly communication is an essential first step in determining their values for and contribution to academic discourse.

- Reliance upon data gathered from scholars requires a mechanism that enables researchers to gather, collate, and organize information about scholarly communication practices that is supplied in an inconsistent manner, that is, by scholars who do not consistently use or even share a vocabulary for describing their publication practices.

- It is necessary to create the means for gathering and organizing information directly from scholars about the various different modes they use or would find useful and desirable for representing their work and communicating their ideas. We envision a matrix that could be used to guide and record information gathered from individual scholars about the different scholarly communication practices that they use, need, and/or seek. It may also be used to aggregate responses as a means, for example, of identifying the key characteristics of a distinctive kind of scholarly communication.

Determining the Level and Distribution of Costs/Benefits to the Institution and Stakeholders

Once a reasonable description of emerging and promising practices and needs is identified, we will then assess how the various stakeholders value a particular mode of communication. One could go so far as to envision an assessment and comparison of the level and distribution of costs and benefits across the lifecycles associated with particular kinds of scholarly communication identified, e.g., critical editions, scientific papers, works of visual arts, etc. Rather, we suggest that a natural first step is to map where responsibilities and costs currently reside, and how those might or might not shift over time. To that end, we have created an additional matrix that identifies in its rows discrete stages of the scholarly communication lifecycle (from conceptualization through production, consumption, and persistent management or even destruction), and in its columns the inputs to and outputs resulting from each discrete stage. We are not proposing a formal cost analysis *per se*. We are interpreting "costs" broadly to include non-monetary costs and benefits. We recognize that we will need to define clearly non-monetary metrics of value (e.g., increased accessibility to information and knowledge, garnering a wider audience, making information available for the public good, the ability to do novel research, more rapid dissemination of results, synergistic thinking, etc.). Using the planning project interviews, we have begun a preliminary analysis of faculty perceptions of advantages and disadvantages to new forms of scholarly communication.

Once we identify and describe the attributes of discrete types of scholarly communication, we would then attempt to evaluate the level and distribution of costs and benefits to the various stakeholders of production, distribution, and use across their lifecycles to the extent possible within the boundaries of the present proposal.

Used in conjunction, the matrices contribute to a framework that will help us to describe different kinds of scholarly communication (both traditional and non-traditional) in a consistent manner that enables:

- identification of emerging trends and needs in scholarly communication, particularly emphasizing new forms of scholarly communication (e.g., blogs, wikis, other online conferences and

exchanges of information, dynamic web-based data resources) that are not easily understood or even described with familiar labels, e.g., monographs, in-person conferences, art exhibits;

- analysis of peer review practices (where established forms of scholarly communication are concerned) and potential for peer review where new and emerging forms of scholarly communication are concerned;

- analyses of the values that are perceived by different stakeholders—whether creators, publishers/distributors, consumers, librarians/archivists, etc.—in different kinds of scholarly communication; and

- analysis of how responsibilities for meeting the necessary roles and costs are distributed—now or in some idealized future—for the lifecycle elements of any form or kind of scholarly communication.

Deliverables

By the end of our research project, we will produce:

- A typology of communication models and practices, i.e., a description of what is going on in select fields from faculty and institutional perspectives.

- A descriptive analysis that identifies faculty needs for scholarly communication and publication.

- Predicted future scenarios for N disciplines useful to those responsible for planning (i.e., where will N disciplines likely be in 10 years?).

- "Cost/benefit" analyses of the sort described above for present and candidate future scenarios.

- Determinations of where current and possible future responsibilities for meeting costs reside (e.g., if in-progress communication evolves into new forms of archival publication, will the activities that a university adopts to support innovation in in-progress communication create some eventual new role for the university archival publisher?).