Executive Summary*

American Council of Learned Societies Commission on Cyberinfrastructure for the Huma

This work is produced by The Connexions Project and licensed under the
Creative Commons Attribution License †

1 Executive Summary

The emergence of the Internet has transformed the practice of the humanities and social sciences—more slowly than some may have hoped, but more profoundly than others may have expected. Digital cultural heritage resources are a fundamental dataset for the humanities: these resources, combined with computer networks and software tools, now shape the way that scholars discover and make sense of the human record, while also shaping the way their findings are communicated to students, colleagues, and the general public. Even greater transformations are on the horizon, as digitized cultural heritage comes into its own. But we will not see anything approaching complete digitization of the record of human culture, removal of legal and technical barriers to access, or revolutionary change in the academic reward system unless the individuals, institutions, enterprises, organizations, and agencies who are this generation's stewards of that record make it their business to ensure that these things happen.

The organized use of networks and computation for the practice of science and engineering was the subject of a 2003 report to the National Science Foundation (NSF), Revolutionizing Science and Engineering through Cyberinfrastructure. [1]In both the NSF report and this one, the term cyberinfrastructure is meant to denote the layer of information, expertise, standards, policies, tools, and services that are shared broadly across communities of inquiry but developed for specific scholarly purposes:cyberinfrastructure is something more specific than the network itself, but it is something more general than a tool or a resource developed for a particular project, a range of projects, or, even more broadly, for a particular discipline. So, for example, digital history collections and the collaborative environments in which to explore and analyze them from multiple disciplinary perspectives might be considered cyberinfrastructure, whereas fiber-optic cables and storage area networks or basic communication protocols would fall below the line for cyberinfrastructure.

Recognizing that a revolution similar to the transformation of science and engineering addressed in the NSF report is inevitable for the humanities and the social sciences and that these disciplines have essential and distinct contributions to make in designing, building, and operating cyberinfrastructure, the American Council of Learned Societies (ACLS) in 2004 appointed a Commission on Cyberinfrastructure for the Humanities and Social Sciences. This report reflects the reach of its sponsoring organization, the ACLS, by focusing on the needs of the humanities and nonnormative social sciences, that is, social sciences that are interpretive.

The ACLS Commission was charged with three tasks:

1. To describe and analyze the current state of humanities and social science cyberinfrastructure

*Version 1.2: Dec 12, 2006 3:57 pm -0600

†http://creativecommons.org/licenses/by/2.0/

[1]National Science Foundation, Revolutionizing Science and Engineering through Cyberinfrastructure: Report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure (January 2003) http://www.nsf.gov/cise/sci/reports/atkins.pdf (<http://www.nsf.gov/cise/sci/reports/atkins.pdf>).

2. To articulate the requirements and potential contributions of the humanities and social sciences in developing a cyberinfrastructure for information, teaching, and research
3. To recommend areas of emphasis and coordination for the various agencies and institutions, public and private, that contribute to the development of this infrastructure

Commission members include humanities scholars, social scientists, administrators, and entrepreneurs from universities and organizations public and private, large and small. All were selected for their experience with digital technologies. The Commission's deliberations were informed by the testimony of scholars, librarians, museum directors, social scientists, representatives of government and private funding agencies, and many other people, gathered in a series of public meetings held in Washington, DC; New York City; Chicago; Berkeley; Los Angeles; and Baltimore during 2004; by national and international reports by other groups on related missions; by advisors to the Commission, selected for particularly relevant expertise; and by responses to the draft report, which was made available for public comment from November 2005 through January 2006.

The Commission heard from those who wanted more advanced software applications, greater bandwidth, and more access to expertise in information technology. We also heard from many who spoke about the potential for cyberinfrastructure to enhance teaching, facilitate research collaboration, and increase public access to (and fair use of) the record of human cultures across time and space. As a result, this report addresses the particular needs and contributions of those directly engaged in teaching, research, and cultural work; but it also places those needs and contributions in a larger context, namely, the public good that these activities, collectively, produce.

As more personal, social, and professional time is spent online, it will become increasingly important to have an online environment that cultivates the richness of human experience, the diversity of human languages and cultures, and the full range of human creativity. Such an environment will best emerge if its design can benefit from the strengths of the humanities and social sciences: clarity of expression, the ability to uncover meaning even in scattered or garbled information, and centuries of experience in organizing knowledge. These strengths are especially important as the volume of digital resources grows, as complexity increases, and as we struggle to preserve and make sense of billions of sources of information.

Many who work in the humanities and social sciences have come to recognize that knowledge in these disciplines is on the edge of some fundamental changes, and that it would be better to approach these changes with specific goals in mind. This report suggests what some of those goals might be. The Introduction answers a few fundamental questions: What is cyberinfrastructure? What do we mean when we refer to the humanities and social sciences? And what are the distinctive needs and contributions of these disciplines in cyberinfrastructure?

As the title of this report is meant to indicate, the online world is a new cultural commonwealth in which knowledge, learning, and discovery can flourish. Our aim, therefore, is to show how best to achieve this cultural commonwealth for the betterment of all.

Chapter 1 makes the case for the transformative potential of an improved cyberinfrastructure with respect to the preservation and availability of our cultural heritage. A coordinated effort to build cyberinfrastructure for the humanities and social sciences, the Commission argues, will benefit the public and the specialist alike by providing access to the breadth and depth of the cultural record.

Chapter 2 explores the constraints that must be overcome in creating such a cyberinfrastructure—insufficient training, outdated policies, unsatisfactory tools, incomplete resources, and inadequate access. These constraints are not primarily technological but, instead, cultural, economic, legal, and institutional. They include:

[U+25CF]the loss, fragility, and inaccessibility of the cultural record;

[U+25CF]the complexity of the cultural record;

[U+25CF]intellectual property restrictions on the use of the cultural record;

[U+25CF]lack of incentives to experiment with cyberinfrastructure in the humanities and social sciences;

[U+25CF]uncertainty about the future mechanisms, forms, and economics of scholarly publishing and scholarly communication more generally;

[U+25CF]insufficient resources, will, and leadership to build
cyberinfrastructure for the humanities and social sciences.

Chapter 3 provides a framework for action. It first articulates five goals for an effective cyberinfrastructure, namely, that it should

1. be accessible as a public good;
2. be sustainable;
3. provide interoperability;
4. facilitate collaboration;
5. support experimentation.

In chapter 3, the Commission also recommends the following measures necessary to achieve these goals (and to meet the challenges described in chapter 2):

1.1 1. Invest in cyberinfrastructure for the humanities and social sciences, as a matter of strategic priority.

Addressed to: Universities; federal and private funding agencies

Implementation: Determine the amount and efficacy of funding that now goes to support developing cyberinfrastructure for humanities and social sciences from all sources; through annual meetings and ongoing consultation, coordinate the goals this funding aims to achieve; and aim to increase both funding and coordination over the next five years, including commercial investments that are articulated with the educational community's agenda.

1.2 2. Develop public and institutional policies that foster openness and access.

Addressed to: University presidents, boards of trustees, provosts, and counsels; university presses; funding agencies; libraries; scholarly societies; Congress

Implementation: The Association of American Universities, in collaboration with other organizations such as the National Humanities Alliance, the Scholarly Publishing and Research Coalition, and the National Academy of Arts and Sciences, should take a leadership role in coordinating the engagement of the humanities and social sciences with issues of information policy.

1.3 3. Promote cooperation between the public and private sectors.

Addressed to: Universities; federal and private funding agencies; Internet-oriented companies

Implementation: A private foundation, a federal funding agency, an Internet business, and one or more university partners should cosponsor recurring annual summits to explore new models for commercial/nonprofit partnerships and to discuss opportunities for the focused creation of digital resources with high educational value and high public impact.

1.4 4. Cultivate leadership in support of cyberinfrastructure from within the humanities and social sciences.

Addressed to: Senior scholars; scholarly societies; university administrators; senior research librarians and research library organizations; academic publishing organizations; federal funding agencies; private foundations

Implementation: Increase federal and foundation funding to one or more scholarly organizations in the area of humanities and social science computing so that they can work with member organizations of the American Council of Learned Societies (ACLS) and others to establish priorities for cyberinfrastructure development, raise awareness of research and partnership opportunities among scholars, and coordinate the evolution of research products from basic to applied.

1.5 5. Encourage digital scholarship.

Addressed to: Universities; research libraries; the National Endowment for the Humanities (NEH); the National Endowment for the Arts (NEA); the Institute of Museum and Library Services (IMLS); the National Academies; the National Archives; major private foundations; major scholarly societies; individual leaders in the humanities and social sciences

Implementation: Federal funding agencies and private foundations should establish programs that address workforce issues in digital humanities and social sciences, from short-term workshops to postdoctoral and research fellowships to the cultivation of appropriately trained computer professionals. The ACLS should lead its member organizations in developing uniform policies with respect to digital scholarship in tenure and promotion.

1.6 6. Establish national centers to support scholarship that contributes to and exploits cyberinfrastructure.

Addressed to: Universities; Congress; state legislatures; public funding agencies; private foundations

Implementation: Universities should develop national and international fellowships at existing humanities and social science computing centers, and develop new centers with such programs, with a combination of university, federal, and private funding.

1.7 7. Develop and maintain open standards and robust tools.

Addressed to: Funding agencies, public and private; scholars; librarians; curators; publishers; technologists

Implementation: University consortia such as the Committee on Institutional Cooperation should license the SourceForge software and make it available to open-source developers in academic institutions. The National Endowment for the Humanities (NEH), National Archives and Records Administration (NARA), and the Institute of Museum and Library Services (IMLS) should support the development, maintenance, and coordination of community-based standards such as the Text Encoding Initiative, Encoded Archival Description, Metadata Encoding and Transmission Standard, and Visual Resources Data Standards. The National Science Foundation (NSF), the Andrew W. Mellon Foundation, the IMLS, and other funding agencies should support the development of tools for the analysis of digital content.

1.8 8. Create extensive and reusable digital collections.

Addressed to: The National Endowment for the Arts (NEA), the National Endowment for the Humanities (NEH), the Institute of Museum and Library Services (IMLS), the National Archives and Records Administration (NARA), and other funding agencies, both public and private; scholars; research libraries and librarians; university presses; commercial publishers

Implementation: National centers with a focus on particular methods or disciplines can organize a certain amount of scholar-driven digitization. Library organizations and libraries should sponsor discipline-based focus groups to discuss priorities with respect to digitization. When priorities are established, these should be relayed to the organizers of annual meetings on commercial and nonprofit partnerships, and they should be considered in the distribution of grant funds by federal agencies and private foundations. Funding to support the maintenance and coordination of standards will improve the reusability of digital collections. The NEA, NEH, and IMLS should work together to promote collaboration and skills development—through conferences, workshops, and/or grant programs—for the creation, management, preservation, and presentation of reusable digital collections, objects, and products.

Finally, in light of these requirements and in order to realize the promise of cyberinfrastructure for research and education, the Commission calls for specific investments—not just of money but also of leadership—from scholars and scholarly societies; librarians, archivists, and curators; university provosts and university presses; the commercial sector; government; and private foundations.