

**FOSTERING THE RECENT HISTORY OF
SCIENCE AND TECHNOLOGY IN NEW MEDIA**

A Proposal to the Alfred P. Sloan Foundation

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1. Overview and Goals

In recent years, the Sloan Foundation has taken the lead in developing a new practice—collecting, documenting, and disseminating the recent history of science and technology through the new electronic media. These innovative experiments have produced promising (but, of course, uneven) results, cultivating on-line archival practices among well-defined audiences and enabling popular engagement in the recent history of science and technology through Web-based interactivity. They suggest that this new approach may indeed alter historical practice and produce valuable resources for writing the history of science and technology. But, like any such experiments, these efforts need refinement, institutionalization, and expansion if they are to have a broad and lasting impact.

This proposal suggests a three-part strategy of *critical assessment*, *institutionalization and aggregation*, and *outreach and education* to achieve these goals. These strategies will foster the collecting, documenting, and disseminating of the recent history of science and technology in new media on a long-term basis. They will be implemented in five major activities conducted over three years:

Critical Assessment (Activity 1): Our first activity will be to undertake a systematic review of Sloan-sponsored projects and similar emerging efforts to produce an evaluation of the current state of the art in collecting, preserving, and disseminating the past on the Web. The main part of the assessment will be concentrated in the first three months of the project, but it will continue as an on-going effort by the same evaluation team to develop best practices for doing the history of science and technology on line. The report produced by this assessment, “A Review of On-line Research Projects in the Recent History of Science and Technology,” will guide and inform the other project activities. (*See Section 2 for a detailed description of our assessment plans.*)

Institutionalization and Aggregation (the **Portal**, Activities 2-4): Considerable efforts to collect and disseminate the history of science and technology on line have already taken place, but they are currently too scattered to have a focused and enduring impact. We propose to create a Portal for the history of science and technology on the Web that will centralize and institutionalize these efforts, functioning as a multi-purpose platform on which diverse audiences can converge. It will be a clearinghouse for on-line projects in the recent history of science and technology, highlighting the current crop of Sloan-sponsored projects while also pointing to other efforts underway by archivists, scientists, technologists, historians, and enthusiasts. It will serve as a collection point for diverse primary sources contributed to that history. And it will be a guide for those seeking to initiate their own projects. Perhaps most significantly it will be the entry point for overlapping audiences (public, students, teachers, scientists and technologists, enthusiasts, digital archivists, oral historians, historians) interested in the history of science and technology and the larger goals of this project. While the Portal will be designed to encourage the convergence of these multiple audiences, we will concentrate most of our activities on meeting the needs of two primary audiences—scholarly *practitioners* and the historical *participants* whom they seek to engage on line.

These multiple goals will make the Portal a diversely structured on-line space, but that diversity is actually deliberate and functional. As commercial vendors have realized, aggregation of content is one of the key ways that sites attract visitors. Yahoo! and Excite have found success as portals where people go not only to find other Web sites but also to organize their finances, find directions, or read movie reviews. Our Portal will have three distinct but interrelated areas:

- a *Virtual Center* for the recent history of science and technology on line (Activity 2; see Section 3.1);
- a *Memory Bank* for the recent history of science and technology (Activity 3; see Section 3.2);

- a *Practical Guide* for the collection and dissemination the history of science and technology on line (*Activity 4; see Section 3.3*).

Outreach and Education (Activity 5): Since our goal is to broaden historical perspectives on recent science and technology by embracing participant history making, we need to adopt a grass-roots strategy that is best tailored to the interests and abilities of our two prime audiences, scholarly practitioners and historical participants. To do this we must mobilize different communities of people who might join in the practice of doing history on the Web: for example, history enthusiasts, archivists, local historians, graduate students, retired scientists and engineers, professional society staff, people affected by scientific and technological change, and others whose experiences were part of the larger story of science and technology in the postwar period. Much of the historical practice in the United States today relies heavily on volunteer and grassroots efforts. Local libraries and historical societies undertake oral histories with volunteers. Individuals collect and document the histories of their families. One of the fascinating developments of the past couple of years is the way that this dispersed, volunteer effort has been leveraged through the Web—the most dramatic example being the way that genealogical research is now widely shared on line.

We will use four main outreach and education strategies: mass mailings (e-mail) to and direct contact with people who might potentially be interested; workshops at George Mason University (GMU); on-line workshops; in-person and virtual consulting. (*See Section 4.*) These outreach and educational strategies will simultaneously serve the goal of *institutionalization*. By developing contacts through the broad community of practitioners of the history of science and technology and publicizing this work, we will make the practice of collecting and disseminating history on line a much more familiar and regular part of the work of that community.

We think that the Center for History and New Media (CHNM) will be an excellent home for these efforts. Our commitment to rigorous historical scholarship and our long-

term involvement in using new media to study, document, and present the past has distinguished the Center's work since its inception. (*See Appendix I for background on CHNM and on the structure of the project and Appendix III for the Budget.*)

Our goals for this project, then, are both concrete and broad. We will produce five major deliverables: (1) a critical, on-going assessment of the practice of documenting the history of science and technology on line, which will involve five leading practitioners from the worlds of the history of science and technology and digital history; (2) the Portal, an on-line center for those interested in the history of science and technology, which will offer (among other things) 300 detailed annotations of history of science and technology Web sites and 10 major on-line dialogues with leading participants in the making of that history; (3) an active collecting effort of our own in our Memory Bank, which will produce at least 500 contributions; (4) a comprehensive guide to collecting history on line; (5) aggressive outreach to hundreds of other possible practitioners through personal contact, workshops, and consultancies, which will result in 50 new practitioners who pursue the collecting and disseminating of the history of science and technology on line.

But more ambitiously we also want to alter public historical practice. Ultimately it will be the diverse, historically engaged publics—intersecting networks of scholars, scientists, engineers, and other historical participants—who will comprise the most significant accomplishment of this project. We seek simply to become the enablers of a social process of memory that is not yet established despite the great potential to do so. To be sure, we are not attempting to replace traditional modes of historical research and scholarship. But we believe that new technology can be leveraged to supplement and greatly enhance those traditional approaches—and that such innovations and experiments may ultimately lead to genuinely new methods.

2. A Critical Assessment of On-line Research Projects in the Recent History of Science and Technology

The first step in any future work must be to evaluate what has already been done. This process was begun at the August 1999 Stanford conference and continued in the final reports submitted by the first five STIM projects.¹ But a public conference is limited in the level of scrutiny it can offer to specific projects. Moreover, in a public setting commentators are not always prepared to be as candid as they might be in other contexts. Similarly, self-evaluations, while enormously valuable, naturally tend to accentuate the positive. A critical, thorough, and disinterested assessment of the current state of this emerging area of historical practice is necessary to guide future research.

In the first three months of this project, we will organize a systematic review of existing Sloan projects in the recent history of science and technology on line—both the original five STIM projects and the additional projects funded in the “second wave.” That assessment will also include non-Sloan projects with similar goals whose experience is relevant to the practice we are trying to foster. For example, in the fall of 1999 NEH launched “My History is America’s History,” a populist effort to stimulate the documentation of family history stories and, in part, to collect those stories on line. More than 325 stories have been posted in the past seven months. Even more successful has been SeniorNet’s *World War II Living Memorial*, which has gathered more than 4,300 reminiscences about the war and the homefront. Museums and media producers have also sponsored successful efforts to gather history on line in conjunction with exhibits and film. For instance, the Exploratorium (a museum of science, art, and human perception in San Francisco) has gathered hundreds of recollections of learning about the bombing of Hiroshima and Nagasaki and PBS’s *RE: Vietnam: Stories Since the War* has collected hundreds of personal stories about the legacy of the Vietnam War. Other similar efforts include *Collected Visions*, a participatory Web site that encourages people to join in creating an archive of family photographs stories; the Sixties Personal Narrative Project;

¹ On the Stanford conference see <http://sloan.stanford.edu/SloanConference/> and for final STIM reports, see <http://www.stanford.edu/dept/HPS/sloanconference/FinalReports.html>

and the MZTV Museum's on-line Oral History Project.² Indeed, one goal of this systematic review, and the project in general, is to assess this burgeoning movement to collect popular memory on line and consider the ways in which it is relevant to the particular project of documenting the recent history of science and technology.

To join us in the process of critical assessment, we will bring in five outside evaluators, including at least one leading scholar or specialist from each of four fields: the recent history of science and technology; libraries, archives, and on-line publishing; oral history and popular memory; and humanities and computing. They will participate in a roundtable discussion at GMU (joined by the project staff and affiliates) during two days in the third month of the project.³ To ensure that the roundtable is focused and informed, we will ask each participant to prepare for it by writing reviews of at least two Sloan-sponsored sites and spending at least a day reviewing the other sites more briefly. The Associate Director for the project will help place the Sloan sites in perspective by presenting a review essay on the practice of collecting and documenting history on the Web. He will also prepare a report on the Sloan projects based on surveying the directors of those projects for their views on what has and hasn't worked so far.

The critical reviews and the roundtable discussion will consider both broad theoretical and methodological issues (e.g., the relationship between "history" and

² See: <http://www.myhistory.org/>; <http://www.seniornet.org/ww2>;
<http://www.exploratorium.edu/nagasaki/memories/amemory.html>;
<http://www.pbs.org/pov/stories/vietnam/story.html>;
http://lists.village.virginia.edu/sixties/HTML_docs/Narrative.html; <http://www.mztv.com/talkback.html>;
<http://cvisions.cat.nyu.edu/mantle/info.html>

³ We have not approached specific people yet for two reasons: 1. We think it would be better to approach people with a funded project rather than a proposal; 2. We wanted to give the Sloan Foundation an opportunity for input in who is chosen for this important task. Potential candidates for the history of science and technology might include: Daniel Kelves, Ruth Schwartz Cowan, David Rosner, Steve Lubar, Susan Smulyan, Marc Rothenberg, Julie Newell, and Stuart Leslie. For libraries, archives, and electronic publishing: Clifford Lynch, Deanna Marcum, Ricahard Lucier, Judith Klavens, Kate Wittenberg, Michael Jensen. For humanities and computing: Randy Bass, Greg Crane, Ed Ayers, Mark Kornbluh, Steve Brier, Janet Murray. For oral history/memory: Linda Shopes, Don Ritchie, Mike Frisch, Ron Grele, John Bodnar, Sherna Gluck, Rina Benmayor, Marita Sturken We would probably bring in at least one veteran of the earlier Sloan projects—someone like David Kirsch whose project has been particularly successful would be ideal—to join in the assessment process. We will also consider people who are active in existing networks like E-DOCS and H-Net.

“memory” and between popular historymaking and oral history archives, the “accuracy” of self-reported history, the potential value to future historians, the on-line research challenges unique to the history of science and technology) and more concrete and practical questions (e.g., the best techniques for attracting participants and insuring full responses, the most effective approaches to presenting, archiving, and organizing material) The discussion will be taped but not made public in order to insure full candor by the participants. The Associate Director will summarize the discussion and the reviews in a report to Sloan. In addition, he and the Project Director will prepare a paper on the current state of collecting history on line for presentation at scholarly conferences and for publication.

Another subject for discussion at this roundtable will be the plans for the rest of this project. If we are going to hold up past practice to close scrutiny, we should surely do the same with future plans. Although the plans sketched below reflect our carefully considered view of how best to foster the practice of collecting and disseminating on-line history, we are open to shifts in course in response to this thorough discussion. Thus, we see this critical assessment not simply as a reflection on what has (and hasn't) been accomplished so far but as a starting point for the next phase of work. Critical review will not stop there but will be incorporated into all phases of this project. Specifically, the report on Sloan projects will be used in preparing the Virtual Center for the Recent History of Science and Technology and the Practical Guide (*see sections 3.1 and 3.3*).

At the end of the first and second years of the project the roundtable participants will be asked to evaluate the project as a whole in light of developments that year and participate in an e-mail exchange that considers whether we need to make changes to our plans in the light of the year's experience. In the last two months of the project we will produce a final edition of the report that will assess the findings of this project over its three-year term and outline areas for future work in this field. The original five outside evaluators will be asked to produce final versions of their assessments to be included in this final report.

3. The History of Science and Technology Portal

In the early days of the Web (way back in 1995!) any site of substance immediately drew attention to itself. “Build it and they will come” was the only strategy you needed. Now, the Web is pretty much like the rest of life—even the most creative and innovative sites are competing with well-funded commercial operations for the attention of scholars, students, and the public. The work sponsored by Sloan needs public attention for several reasons: existing sites need to attract more participants who can contribute historical materials; they need to attract the attention of scholars and students who will make use of the materials gathered, to write the future histories of science and technology; and they need to stand as exemplars to others who seek to capture the history of science and technology as it is made. If we are to foster new on-line historical habits, we must attract those who will deposit their histories and artifacts on line as well as those who will make use of those emerging histories.

How best can that be done? As noted above, we believe that “aggregating” content, links, and services that will attract and converge diverse audiences. Recent research on Web traffic has shown that as much as half of all traffic does not flow among well-linked sites, but circulates within sites that are segregated from the rest of the Internet or dissipates away to sites that do not link back.⁴ For sites on the recent history of science and technology—already suffering from the obscurity caused by topical fragmentation—this is a real problem. Such sites and the larger research enterprise in this area need to be closer to the mainstream of Web traffic. A Portal addresses this problem. At the present time, for example, most of the different Sloan-sponsored sites are difficult to locate; simply creating a common Portal would increase traffic at all of the sites and would foster cross-pollination among them.

We will offer a number of features aimed at attracting visitors from diverse publics and encouraging them to interact within the Portal. The three main sections of the Portal

⁴ See Andrei Broder, et al. “Graph Structure in the Web,” available on line at <http://research.compaq.com/news/map/www9%20paper.htm> and summarized in Ian Austen, “Study Reveals Web As Loosely Woven,” *New York Times* (May 18, 2000): G8.

will each emphasize different audiences, with the Virtual Center focused on historical participants (and the general public to a lesser degree), the Memory Bank on participants who have shaped the history of science and technology, and the Practical Guide on those practitioners interested in collecting and preserving that history (including archivists, librarians, history enthusiasts, and history professionals).

But the value of a Portal will be to encourage interactions both within and among the different areas and audiences. Retired physicists contributing to the Memory Bank will recommend friends in electrical engineering as possible participants. A schoolteacher making use of the Virtual Center will realize that she has a story to tell about growing up in Cape Canaveral. The curator of an archive in the history of medicine, who is looking for tips in the Practical Guide, will find out about Web sites in the history of medicine through Virtual Center. Scholars querying the Memory Bank will consider whether they want to experiment with some of the techniques for collecting history on line that are explained in the Practical Guide. By making the Portal the starting point for anyone interested in the history of science and technology, we will provide an important public service while also fostering the specific goals of the project.

3.1 A Virtual Center for the History of Science and Technology on the Web

The Virtual Center will have the broadest audience of the three areas of the Portal. It will provide a service to anyone interested in the history of science and technology while specifically appealing to participants in the project of collecting, documenting, and disseminating that history on line. It will add materials and features as it grows over the course of the project. The core features will be:

3.1.1 A Directory to the History of Science and Technology On line: Enter “Albert Einstein” into a typical Web search engine and you will be quickly be overwhelmed with 140,000 “hits.” Some are extremely valuable; others are peripheral to any serious interest in the history of science (e.g., the Web page of the company that cleaned the Einstein statue at the National Academy of Sciences). This excess often leads people to throw up their hands when looking for authoritative, historical material on line. There is a great need for careful

filtering of Web based resources, as no comprehensive filtering exists for the history of science and technology. We propose to create a well-annotated, on-line guide to the 300 best sites in the History of Science and Technology (150 per year for the first two years). This will serve four purposes: it will be a service to students, teachers, and members of the general public who want to learn about the history of science and technology; it will be a service to sites in history of science and technology (including those sponsored by Sloan) by sending traffic to them; it will attract traffic to our own site, attracting participants to the Memory Bank (*see Section 3.2*); it will keep us informed on the evolving practice of presenting the history of science and technology on line.

There are, of course, several existing sites—from commercial vendors like Yahoo and from University libraries at Delaware and Minnesota—that provide directories of sites in the history of science and technology. While valuable (and a resource we will use), these sites do not provide sophisticated filtering or full and critical annotations of Web resources. In other words, they are little more than lists of links with perhaps a few words of commentary. We will be providing full-length annotations that will make our resources much more useful to scholars, students, and the general public. At the same time, we will consider forging alliances with existing commercial and non-commercial efforts. We will also investigate alliances with scholarly journals by which we might co-publish more extensive, scholarly reviews of Web sites in the journal and on line.

We have already demonstrated the success of this model at our site, *History Matters: The U.S. Survey Course on the Web*, which is funded by the Kellogg Foundation and the National Endowment for the Humanities.⁵ This resource is widely used by college and high school history teachers because it provides topical categories and paragraph-length annotations for U.S. history web sites. The Directory will employ annotating practices similar to those we have developed for *History Matters*. (That site also includes, for example, an alliance

⁵ See <http://historymatters.gmu.edu>.

with the *Journal of American History* for co-publishing scholarly reviews of Web sites.)

3.1.2 Featured Dialogues in the History of Science and Technology: Four times a year, beginning in the second half of the first year, we will organize a “dialogue” with a major figure in the recent history of science and technology. A leading scholar of science and technology will interview the person—say, a key figure in the space program—on line. Then, both the scientist and the historian will be available to answer questions for a two-week period. The event will be widely publicized among participants and practitioners. The dialogue will have three major purposes: attracting visitors to the Portal and building awareness of its features; attracting people who will contribute to the Memory Bank; creating a permanent record about one person’s contribution to recent developments in science and technology.

The ten topics that we select for the featured dialogue will be areas of particular concentration for the Portal and Memory Bank. We will choose topics that reflect a broad and contextualized view of the history of science and technology both because we think that those topics will interest the broad and diverse audiences we hope to attract and because that is also what many scholars in the field are emphasizing in their work. The ten topics will be selected in consultation with advisors in the history of science and technology and based on the availability of good dialogue participants. The topics will be chosen for their ability to attract popular interest and participation, and thus might include such issues as: science and technology in the Cold War; women and minorities in recent science and technology; innovations in public health as a response to the AIDS crisis; the space program and the introduction of "space age" technologies; the emergence and popularization of the Internet; birth control and the sexual revolution; television and the emergence of a mass market.

3.1.3 Timeline: This feature connects to and feeds into the dialogue. The project team, in consultation with the dialogue participants and other experts, will create

timelines for the ten major topical areas. These timelines will link out to resources organized in other parts of the Portal where appropriate.

3.2 A Memory Bank for the Recent History of Science and Technology

Another key goal of the Portal will be to serve as a central collecting point for primary historical sources pertaining to recent developments in science and technology. The Virtual Center and the Practical Guide (*see Section 3.3*) will, in part, act as magnets, attracting scholars and historical subjects to the site whose interest and experience in a subject area may motivate them to deposit materials relevant to preserving and collecting this history. As appropriate, this traffic will then be directed to a special section of the Portal called the Memory Bank, whose features will encourage visitors to become active participants in making the recent history of science and technology. At the same time, recognizing the variable success in previous Sloan projects with this approach, we will also rely on other recruiting approaches to fill the Memory Bank—including direct mail, e-mail, and postings in related bulletin boards and chat rooms. Through mass mailings, we intend to contact at least 2,000 people per year. We would particularly seek out lists of retired scientists and engineers.

The Memory Bank, like the rest of the Portal, will be designed to attract a wide range of participants. It will allow us to experiment with a variety of approaches to eliciting contributions from participants in the recent history of science and technology. Part of our annual assessment of the project will be to reconsider recruiting strategies we have been using and the relative effectiveness of each activity within the Memory Bank. In addition to our own activities, outlined below, we will encourage Sloan projects and others we assist to make use of the Memory Bank by tailoring it their own purposes with our help. We hope to record a total of 500 historical contributions to the various components of the Memory bank over the course of the project; approximately 125 in year one, 175 in year two, and 200 in year three.

Audiences will have three main channels by which to contribute historical artifacts of their experiences relevant to the recent history of science and technology:

3.2.1 My Life in Science and Technology: This section will encourage people to write autobiographical essays about their own experiences working in science, medicine, and technology. Popular autobiography is a well-established form, particularly in England and Japan.⁶ We propose to adapt this form to the particular population of scientists, doctors, engineers, and inventors whose stories will become the basis of the next generation of history writing. We particularly want to attract two populations to contribute to this section of the Memory Bank—“mid-level” participants in scientific and technological innovation and retired scientists and technologists.

Our interest in “mid-level” participants reflects our effort to counter the inevitable bias in the archival and written record to celebrate the most famous figures—Nobel Prize winners and founders of major companies, for instance. The focus on retired folks makes sense because they are more likely to have the time and inclination to reflect on the past. As Tim Lenoir observes in his report on the MouseSite: those still “active in building technologies and new companies . . . cannot easily devote time to writing about their work. Furthermore . . . [h]istory for them is looking backward, and asking them to write about their past achievements can suggest they are no longer active participants in the technological revolution they helped to launch.” Older people, by contrast, are much more focused on reflecting on the past.⁷ Until very recently, the use of a Web-based forum for recording such life histories would have been counterproductive given the youthful age bias in Internet use. But that is now changing very rapidly as many recent studies document. Very soon, most people over sixty-five—particularly with the educational and income characteristics of the group that interests us here—will be regular users of the Web. Moreover, the

⁶ See, for example, Gerald Figal, “How to *jibunshi*: Making and Marketing Self-histories of Showa Among the Masses in Postwar Japan,” *Journal of Asian Studies* 55 (November 1996): 902-33; Paul Thompson, *The Voice of the Past: Oral History* (1988); Popular Memory Group, “Popular memory: theory, politics, method,” in Richard Johnson et al. eds., *Making Histories: Studies in History Writing and Politics* (1982).

⁷ Roy Rosenzweig and David Thelen, *The Presence of the Past: Popular Uses of History in American Life* (New York: Columbia University Press, 1998), 63-5.

recent success of SeniorNet in gathering World War II memories suggests that older Americans may be particularly interested in recording their stories on line.⁸

The Stanford conference emphasized the importance of involving professional societies in this new endeavor. We will work with professional societies—through mailings and articles in their newsletters and journals—to encourage participation in this effort to “write your own history.” (We particularly want to work with professional societies already involved with the Sloan effort and hope that the Foundation can foster that connection.) We also think that this is the kind of effort that will feed itself after we reach a critical mass. We intend to turn the earliest participants into recruiters of new authors. For example, we will include a place where people can provide the names and e-mail addresses of friends and colleagues who may be automatically contacted to enlist their participation. We will also encourage participation by asking all of the scientist participants in the Featured Dialogues to contribute to this section.

To encourage effective autobiographies from those not accustomed to writing about themselves, we will offer people the option of a “self-guided” autobiography that will present them with a template of questions to answer. Those who feel constrained by such a format will be able to write in a free-form manner. In either case, we will offer suggestions and examples to help people in the writing. Following the approach in “My History is America’s History,” we will have people index the autobiographies themselves according to predetermined set of categories. Although this is obviously less precise than professional indexing, it is the only cost-effective approach. While we will encourage public posting of the autobiographies, we will offer participants the option of closing their reminiscences for five, ten, or twenty-five years.

3.2.2 Great Moments in Science and Technology: Rather than solicit life stories, this section will ask for information about key developments in the history of

⁸ On older Americans and the Internet, see the reports gathered at http://www.seniornet.org/abo_res.shtml.

science and technology in the past half century. Although we will be open to contributions on any topic, we will focus on twenty subjects of great importance, including the ten chosen for the dialogues. For those topics, we will create template questionnaires and will also develop focused recruiting strategies. As the final STIM report notes, questionnaires (along with e-mail) were the most successful approaches to developing interactivity.

3.2.3 Everyday Encounters in Science and Technology: This will be the section of the Memory Bank for people whose connection to the recent history of Science and Technology is as consumers rather than as innovators, designers, or managers, but who have important stories to tell. We will use many of the same topics as in the Great Moments section, highlighting those most relevant to the consumer experience. We think that consumers—especially early adopters of new technology—are often eager to tell their stories. Significantly, two STIM projects that were especially successful in recruiting on-line participation were the Electrical Vehicle and Blackout projects, which focused specifically on consumers rather than scientific and technical innovators. These projects suggest that there is great potential for recording science and technology from the little-documented perspective of ordinary consumers.

In recruiting participants for both the “Great Moments” and the “Everyday Encounters” sections, we will make particular use of the Featured Dialogues. All essays and talks will emphasize topics that are featured here and, thereby, draw participants. For example, a talk by Vinton Cerf on the creation of the TCP/IP protocol would attract comments not only by others who worked on early Internet protocols but also from early Internet users.

All of the features of the Portal, including the Memory Bank, will be organized through a single database to facilitate searching and cross-referencing. In doing so, we hope to make use of the metadata classifications generated by STIM and the other Sloan

projects.⁹ Archivists, curators, and digital librarians will be enlisted to help extend the metadata-driven classification scheme structuring the Portal.

The Memory Bank is intended as an ongoing and permanent historical resource for the history of science and technology. But its purposes are actually somewhat broader than that. Given that our largest goal is fostering activity on the part of others, we see the Memory Bank, in part, as a testing ground for approaches to interactivity that can be used by others. If we can show that these techniques work here, then we can more readily recommend them to others. In addition, the resources of the Memory Bank will be another feature of the Portal that will bring people to us, whom we can, in turn, push out to other sites working in related areas.

3.3 A Practical Guide for the Collection and Dissemination of the History of Science and Technology On Line

In pursuit of our larger goal of fostering the recent history of science and technology in new media our most important work will be in stimulating, encouraging, and improving the work of others. It is unrealistic for any group to think that it can change practice on its own. Rather it is necessary to leverage existing practice and work with established communities. Indeed, one of the key conclusions from first wave of STIM projects is that “to be successful, Sloan projects should attempt to integrate the work of the community they wish to address.”

Significantly, there is already considerable activity and energy devoted to developing on-line sites in the history of science and technology. Dozens of existing sites come from archives and libraries, professional societies, amateur enthusiasts, and university-based scholars. Yet most of those sites are weak in precisely the interactive dimension that the Sloan projects have emphasized. These sites are much stronger on presenting the past than collecting it.

⁹ We do not need to store materials locally within the Portal. We simply require a reference, such as a URL or a database ID, and a way to capture metadata classifications. Since we will be working with the Sloan

Thus, we seek both to involve new groups and individuals in preserving and collecting history on line and to encourage existing groups and individuals to move toward a more interactive practice. We will do this both by providing them with the necessary tools and resources (the focus of this section) and by working with them directly (the focus of the next section).

A specialized area of the Portal—the “Practical Guide”—will be devoted to new and ongoing Web projects on the recent history of science and technology. How can we help them and also raise the state of the art in collecting the recent history of science and technology? We think that the strongest need is for practical advice and discussion that will take people step-by-step through the process of doing history on line and will gather the experiences of pioneers in this emerging field. The world of digital scholarship is currently beset by enormous uncertainty concerning the ethical, legal and pragmatic constraints surrounding online work. This is precisely why we propose to provide some clarity where confusion and uncertainty abound. Scholars of technology must pick and choose from a dizzying array of scripts, templates and guides, a task we plan to inform through thoughtful evaluation and consideration of the special concerns within the study of science and technology.

The Practical Guide will accomplish this in three featured areas:

3.3.1 A Toolkit: This extensive toolkit will provide nuts-and-bolts guidance and resources on how to conduct on-line research projects. It will include eight main topical areas covering: historiography, design, recruitment and publicity, copyright and intellectual property, privacy issues, archival management, text preparation (e.g. SGML markup, scanning), and technical issues surrounding Web site and database management. Given our focus on the history of science and technology, we will devote particular attention to the approaches most appropriate to that field.

projects in question, we should be able to obtain these classifications directly from each project’s database system.

Our work on this section will draw on the help of specialized consultants in digital archives, interface design, public memory, computing and humanities, and copyright and intellectual property. We will also ask those consultants to serve as “guest commentators” on specialized issues that interest the practitioners we assist (*see section 3.3.3*).

3.3.2 Templates and Scripts: This section will organize HTML templates, FAQs, consent forms, software reviews and other electronic “tools” that scholars can use to build their own projects.

3.3.3 Shoptalk: In addition to a basic guide, we will feature a Guest Commentator (drawn from our consultants) on a regular basis to offer a commentary on some (ideally provocative) issue in collecting and preserving the recent history of technology. In the long run, this feature might develop into the equivalent of a journal with reviews of sites and commentaries on evolving practice. Much like the Featured Dialogues, the Guest Commentator will draw the attention of her/his colleagues and will bring to the Shoptalk forum a special focus on her/his area of expertise. We will post selections from Shoptalk to relevant discussion lists such as H-MMEDIA and E-DOCS.

This Practical Guide is appropriately published on line not just because of the symmetry of an online guide to on-line history or the simplicity and efficiency of distribution that this offers. On-line publication makes great sense because it is a medium that allows us to serve the needs of different audiences. For example, one key audience for such a Practical Guide will be archivists who might have collections related to the subject area. This constituency does not need guidance in archival practice, but it does need advice on recruitment and Web design. By contrast, those associated with professional societies have excellent contacts for recruitment but could use advice on archival practice and historiography. Technology enthusiasts similarly have great contacts with practitioners and substantial energy for preserving the past, but they often view history somewhat narrowly. As David Kirsch perceptively notes in his discussion of the EVOnline project, owners of electrical vehicles were enthusiastic about the subject of

the site, but they did not always grasp “the kinds of materials and issues of interest to historians of technology” and “failed to evince interest in anything beyond traditional history of artifacts.” As Kirsch realizes, it is unrealistic to think that we are going to instantly transform fundamental views, but we want to supply tools, resources, and insights that will lead to some broadening of perspective.

4. Outreach, Education and Training for Historical Practitioners

The Stanford conference revealed the importance of focused recruitment strategies for attracting historically significant on-line contributions. This ultimately involves identifying the social and civic networks through which most citizens and professionals engage the public issues that matter to them. Since few research projects are sufficiently large or enduring to engage these networks successfully, it is important that an authority such as Sloan establish a public space in which scholars, engineers, scientists and the public can set up lines of communication and partnership. Through outreach and education efforts, this project will initiate the institutional relationships on which such a clearinghouse may be built. Although we believe that the Portal will attract people to this new practice and that resources like the Practical Guide will improve their work, we will also need to take some other proactive steps to encourage this work.

4.1 Outreach

At the simplest level, we need to make interested people aware of this as an approach to preserving the history of science and technology. To that end, we will, first, seek to publicize this work among the diverse constituencies who might be interested in joining in this effort: archivists, curators, and librarians with collections in the history of science and technology; leaders in professional societies; scholars and graduate students in the history of science and technology; collectors and popular enthusiasts in the history of science and technology. We will do this through articles and notes in relevant journals and newsletters (5 per year for the first two years), participation in conferences (two per year for the first two years), and mass mailings (via e-mail where possible). An important

part of our outreach will be done through individual phone calls, emails, and letters. For example, we intend to contact all leading professors teaching the history of science and technology in doctoral programs as an avenue into reaching graduate students. We will also contact every significant archive with collections in the history of science and technology. Over three years, we intend to have direct contact (mail or phone) with at least 250 people in the history of science and technology community of practitioners (scholars, graduate students, archivists, librarians, and enthusiasts).

In order to tap most effectively into the most appropriate social and professional networks, we will seek out ten “consultant/recruiters”—insiders to the fields who can tell us the best ways to reach these constituencies. Among the most likely prospects, we will follow up with phone calls. The goal will be to get them to take a look at what has been done and to consider whether they would like to launch similar efforts on their own. (We will simultaneously recruit participants in our Memory Bank through this effort since we expect our “consultant/recruiters” to be well-connected members of fields where we seek to recruit participants.)

Despite the seeming on-line nature of this project, we also intend in our outreach to focus particularly on local institutions and individuals. The Washington, DC, area probably has the richest concentration of scholars and archives working in the history of science, technology, and medicine, and we will take advantage of that in building interest in this project.¹⁰

4.2 Consultancies and Expertise Exchange

We will, then, offer assistance to those who are most interested, targeting twenty-five projects over the course of the three years (5 in year one, 10 in year two, and 10 in year three). For some, this will simply involve directing them to the resources we have placed on line—especially our Practical Guide. If appropriate, we would also work with existing Sloan projects where it appears that our advice and assistance would advance their

¹⁰ See, for example, Stephen Brush’s extensive listing of Science, Technology & Medicine Archives in the DC-MD-VA Area at <http://carnap.umd.edu/chps/archive.html>.

efforts. For others, we will provide virtual consultancies—up to a day of help and advice on how to launch a project. For those willing to make a serious commitment, we will invite them to apply for a spot in a workshop on collecting and disseminating the recent history of science of technology on line. We will also ask people we help to offer their assistance to other projects. These services will be listed in a on-line “expertise exchange.” We would hope, for example, to match up a graduate student studying the history of physics with a group of retired physicists.

4.3 Workshops

In year one, we will offer one, two-day workshop, which will cover the same basic topics as the Practical Guide. As a further inducement to participate, we will give small \$500 seed grants to participants, make ourselves available for at least one day of consulting for each project, and offer free server and Memory Bank accounts for any project that needs it. The first-year workshop will allow us to “beta-test” sections of our guides to optimize them for our various audiences. In year two, we will have two “live” and one “virtual” workshop, and in the last year we will have one live and one virtual workshop. Each “live” workshop will have six participants and the virtual workshops will have at least five each. Through outreach, consultation, and workshops, we hope to involve at least 50 new members of the history of science and technology community in the practice of collecting and disseminating history on line.

Appendix I: Project Organization

I. A The Center for History and New Media

CHNM is a logical location for this project because of our long-term commitment to combining excellence in traditional historical scholarship with experimentation with new media. Over the past several years, we have established an international reputation for our innovative work at the intersection of new technology and the more venerable pursuit of the past. Our interest in making innovative use of new media grows directly out of our successful work in developing one of the first scholarly based CD-ROMs about U.S. history — *Who Built America? From the Centennial Celebration of 1876 to the Great War of 1914* (published by Voyager in 1993), which won the American Historical Association's James Harvey Robinson Prize for "outstanding contribution to teaching."

Since the publication of that disk, we have been involved in other new media projects (most often in collaboration with our colleagues at the American Social History Project at CUNY) aimed largely at diverse audiences, including development of a sequel to the original disk, *Who Built America? From the Great War of 1914 to the Dawn of the Atomic Age in 1946* (now in final production and to be published by Worth in 2000); a game-like exploration of key moments in U.S. social history (*Landscapes in Time*); and a Web/CD-ROM project on the French Revolution for high schools and colleges (*Liberty, Equality, Fraternity: Exploring the French Revolution*), a Web portal for teachers of U.S. (*History Matters: The U.S. History Course on the Web*); the New Media Classroom (national and regional workshops for high school and college teachers on the effective use of new technology in the classroom); experiments in publishing on-line hypertext scholarship (in collaboration with *American Quarterly* and the *Journal of American History*); and the development of a technology-enriched version of the history survey course. These projects have received more than \$3 million in support from NEH and the Rockefeller, Kellogg, Gould, and Mellon Foundations and other private and public funders. Many of the projects involve Web site development (e.g., *History Matters*) or outreach and education (e.g., the New Media Classroom) of the sort that this project requires.

Two recent developments will insure that our work in these areas is not only continued but also expanded. First, NEH recently awarded CHNM a \$500,000 challenge grant; when the three-to-one match is made, we will have a \$2 million endowment in support of our work. That endowment will, for example, make it possible to bring two post-doctoral fellows to work at the Center every year along with a number of GMU faculty fellows. (Part of the responsibility of the post-doctoral fellows will be to work with ongoing projects like *History Matters* and this one.

Second, this past spring the State Council for Higher Education in Virginia (SCHEV) approved the creation of a new history doctorate at GMU. The central focus of that degree will be "history and new media"—the first such program of its kind in the United States. (We already have a History and New Media track in our Masters program.) The program will bring a regular flow of graduate students to GMU interested in work at the

intersection of history and new technology. The program will also bring new resources to the Center; the university will be allocating \$150,000 for a new lab specifically for CHNM. And a national search has just been launched for a tenured, senior appointment in history and new media. The challenge grant and the new Ph.D. will allow us to further reinforce our reputation for cutting edge work in history and new media. Equally important, they will insure that any initiatives undertaken by the Center promise to be long lasting.

I. B Project Team and Responsibilities

I. B. 1 Staff (Brief vitae for all major participants are in Appendix IV.)

Principal Investigator and Project Director: Roy Rosenzweig is CAS Distinguished Professor of History at George Mason University, where he also heads the Center on History and New Media. He is the co-author with Elizabeth Blackmar of a prize-winning study of *The Park and the People: A History of Central Park*. His other books include *Eight Hours for What We Will: Workers and Leisure in an Industrial City, 1870-1920* and he has edited volumes on history museums, history and the public, teaching and oral history. His most recent book (co-authored with David Thelen) is *The Presence of the Past: Popular Uses of History in American Life*, which recently received prizes from the AASLH and the Center for Historic Preservation. *The Director has overall responsibility for the grant; he will, for example, participate in all decisions about the overall design of the Portal, the development of the Practical Guide, and the outreach plans. He will participate actively in the critical assessment.*

Associate Director: James Sparrow (*pending approval by Sloan*) Between 1997 and 2000 Sparrow directed the Blackout History Project, one of the five original STIM projects funded by Sloan to investigate the uses of online research in the recent history of science and technology. He is an advanced Ph.D. candidate in the History program at Brown University where he is completing a dissertation on citizenship and the expansion of government authority during World War II. He spent two years as coordinator of the “Technology Across the Curriculum” program at George Mason University. *The Associate Director is responsible for implementing strategic plans developed with the Project Director, recruiting participants (consultants, Dialogue Hosts, Guest Commentators), chairing workshops, designing and editing materials produced for the project, and writing reports.*

Project Manager: *The Project Manager has day-to-day administrative responsibility for the project. He/she will insure that all participants meet deadlines and responsibilities as well take direct charge of outreach and publicity, coordinating the work of consultants and featured discussion participants, and overseeing the Webmaster and programmers. (Jessica Finnefrock was identified in the original proposal as the person to serve as project manager, but—in a reflection of the current job market for people with technical skills—she has taken a different position at a salary we could not match.)*

I. B. 2. Faculty Affiliates:

We are fortunate that GMU has a number of faculty members whose interests connect directly to this project. This is a valuable resource for the project as well as another way of insuring the long-term continuity of this project. The three faculty affiliates listed below will be part of the local project team (joining in regular discussions about the project and in the assessment conference); at the same time, they will take on particular roles in the project. Naturally, the new faculty in New Media we are expecting to add at GMU (e.g., the new senior appointment and projected post-doctoral fellows) will also join in the project.

Michael O'Malley, the Associate Director of CHNM, brings to the project a background in history of technology (as the author of a book on the history of time) as well as an expertise in Web design. He will oversee Web design on the project. O'Malley is also well known as a popular and engaging teacher; he will help to teach the workshops.

John Cheng has extensive background in history of science with an undergraduate degree from Harvard in "History and Science" and Ph.D. from University of California, Berkeley, in history of science and cultural history. Cheng also has extensive experience in Web site and database design and will take an active role in designing the Portal.

Alison Landsberg's work focuses on issues of public memory and public history. She will help in designing and evaluating the Memory Bank.

I. C Advisory Committee

The core of the advisory committee will be the five scholars and specialists who will participate in the initial assessment. To them, we will add five others from similar fields. If appropriate, we will include someone from the Sloan Foundation and at least two people from other Sloan-funded projects in this area.

• **Appendix II. Plan of Work**

Year 1

Month 1

- Start recruiting roundtable participants
- Start recruiting Guest Commentators
- Start recruiting Dialogue Hosts
- “Whiteboard” planning for Portal structure.

Month 2

- Research on “state of the art” for on-line historical practice (preparation for Roundtable).
- Beta version of Core Portal up for design review (password protected).

Month 3

- Roundtable on Sloan projects
- Core Portal launch
- Start Virtual Center (feature Critical Assessment)

Month 4

- Critical Assessment: Report on Sloan Projects (1st edition) by the Roundtable
- Outreach starts (consultant/recruiters)
- Consulting starts

Month 5

- Launch Templates and Scripts section of the Practical Guide
- Begin outreach to history of science and technology community

Month 6

- Start beta version of My Life in Science and Technology
- Start beta version of Everyday Encounters with Science and Technology
- Start beta version of Great Moments in Science and Technology
- Guest Commentator 1

Month 7

- Dialogue 1
- Start “Shop Talk” by Guest Commentator 1
- Live Workshop 1

Month 8

- Begin mass mailings, guerilla marketing

Month 9

- Formal Launch of My Life in Science and Technology section
- Launch Everyday Encounters with Science and Technology
- Formal Launch of Great Moments in Science and Technology section

Month 10

- Dialogue 2
- Promotional articles/notes placed in newsletters and other channels

Month 11

- Launch Toolkit in Practical Guide

Month 12

- Roundtable participants critically assess year one's work and make suggestions for Year 2
- Year 1 Status Report to Sloan

Year-end Benchmarks: 150 entries in the Directory, 125 entries in the Memory Bank, 2 Dialogues, 5 consultations, 5 outreach articles/notes placed in print, 2 conferences attended, 1 live workshop, 2,000 mass mailings; first section of toolkit posted; 100 direct contacts with history of science community.

Year 2

Continue ongoing activities: the Directory, My Life in Science and Technology, Great Moments in Science and Technology, Everyday Encounters in Science and Technology, the Practical Guide, consulting and outreach.

Month 1

- Guest Commentator 2 works with team on Practical Guide

Month 2

- Feature Guest Commentator 2 in "Shop Talk"

Month 3

- Dialogue 3

Month 4

- Live Workshop 2

Month 5

- Formally launch Toolkit in Practical Guide

Month 6

- Dialogue 4

Month 7

- Guest Commentator 3 works with team on Practical Guide
- Live Workshop 3

Month 8

- Feature Guest Commentator 3 in Shoptalk

Month 9

- Dialogue 5

Month 11

- Virtual Workshop 1

Month 12

- Dialogue 6
- Roundtable participants critically assess year two's work and make suggestions for Year 3
- Interim report to Sloan

Year-end Benchmarks: 150 additional entries in the Directory, 175 entries in the Memory Bank, 4 Dialogues, 10 consultations, 5 outreach articles/notes placed in print, 2 conferences attended, 2 live and 1 virtual workshops (with at least 17 participants), 2,000 mass mailings; five more sections of Practical Guide on line; direct contacts with 100 additional members of the history of science and technology community.

Year 3

Continue ongoing activities, wrapping up in the last three months: the Directory, My Life in Science and Technology, Great Moments in Science and Technology, Everyday Encounters in Science and Technology, the Practical Guide, consulting.

Month 1

- Showcase My Life in Science and Technology

Month 2

- Virtual Workshop 2

Month 3

- Dialogue 7
- Guest Commentator 4 works with team on Practical Guide

Month 4

- Feature Guest Commentator 4 in "Shop Talk"

Month 5

- Dialogue 8

Month 6

- Showcase Great Moments in Science and Technology

Month 7

- Dialogue 9

Month 8

- Showcase Everyday Encounters with Science and Technology

Month 9

- Start Dialogue 10

Month 10

- Live Workshop 4

Month 11

- Revise Critical Assessment Report (2nd edition)
- Archive materials collected in the Memory Bank

Month 12

- Roundtable participants critically assess project
- Final report to Sloan

Year-end Benchmarks: 200 additional entries in the Memory Bank (500 total), 4 Dialogues, 10 consultations, 5 outreach articles/notes placed in print, 2 conferences attended, 1 live and 1 virtual workshops (at least 11 participants), 2,000 mass mailings; Practical Guide completed; direct contact with 50 additional members of the history of science and technology community; final evaluation by roundtable participants.

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