State of the Art

To be true to the spirit of the Humanities, we need to talk about _states_ of the art. Humanities is a large umbrella under which there are many disciplines carrying on varieties of work, almost all of which are divisible into small components down to the unique research of a particular individual. Only occasionally is Humanities research carried on by teams or under the rubric of a collective project. Therefore, the current state of tools and access to content via computer is, with some few exceptions, scattered across many sites and many individual projects.

In most institutions, the Humanities include performance and artistic production (theater, music, literature, filmmaking; painting, sculpture, photography); critical and theoretical work (art history, literary theory and criticism, film and media theory and criticism, rhetoric, philosophy, linguistics); research (history, literature, art history; music history; film and communications); and language learning. Very often, these areas intersect.

Given this diversity and the fact that much of the work of Humanities has been traditionally intuitive rather than deductive, and based profoundly on the book, technology acceptance is slow but steadily increasing. On the basic level of equipment, there is an enormous disparity. The majority of researchers and professors in the Humanities still use low-powered DOS-based or Mac computers to do word processing and e-mail. Networking is not universal, though many have some kind of Internet hookup. Some are content with this level of access, but may be unaware of more sophisticated possibilities and opportunities to improve their work lives. With increased training and knowledge of such possibilities, they should be able to improve their interest and access, resulting in a greater impact on their intellectual communities, their students, and their publics.

Others in the Humanities are actively exploiting technological possibilities to advance their research and teaching. A few are devoting the majority of their research to creating computer-based tools for their disciplines. In some cases, there are team projects in which common access techniques are being developed. In the case of individual research projects, even the best work is often—perhaps usually—done without careful attention to human interaction factors.

Current Research & Its Promise

Three categories can be identified in and with which the majority of current Humanities research is being carried out:
The Internet, which can be subdivided into electronic discussion groups and Web sites.

Existing software, such as graphics, presentation, database and database front-ends, and multimedia authoring packages that are used to develop discipline-specific applications.

Original software developed for specific or general research projects.

Network access is probably the most important computer tool for the Humanities, and the first computer tool used by many faculty when they step beyond word processing. The proliferation of discussion groups permits free circulation of ideas and is especially useful in helping colleagues share information. For example, the NEH supported H-Net—a network of fifty seven Humanities listerservs supervised by the University of Illinois-Chicago and Michigan State University—provides moderated fora in subjects as diverse as women's history, American studies, ethnic immigration, film history, rural and agricultural studies, and comparative literature and computing. Other Humanities electronic discussion groups have waxed and waned over the years, probably because they were too general. But most H-Net groups seem to thrive because of focus and careful supervision.

But these and other network-accessed discussion groups suffer because of the lack of a unified network interface and an accessible source of information about their very existence and the procedures necessary to sign up. A single university may have a number of different ways to make a network terminal connection, from a simple telnet client to a more sophisticated or customized user interface developed for a particular department or college. There are, as well, inadequate resources for informing Humanities scholars what discussion groups exist and how they can be accessed. Typically, someone finds out about one discussion group by already being signed up on another. While directories (of listerservs, institutions, archives, bibliographies, people, etc.) exist, they are not commonly known. This haphazardness used to be considered part of the charm of the Internet. It is now a primitive constraint that is keeping the flow of information from many people who could benefit from it.

The World Wide Web does provide what might be called a general, external common interface for those who can access it. The menu functions of the Mosaic or Netscape viewers are the same to anyone who uses the software. The important consideration, therefore, is the interface design of a specific site, what information is presented, and how it is organized.

There exist some exemplary sites. The Institute for Advanced Technology in the Humanities, located at the University of Virginia, and directed by John Merritt Unsworth, maintains one of the most advanced sites in Humanities research. The interface is simply and clearly organized; the content is rich and growing. IATH provides an outlet for the work of UVA scholars, such as the nineteenth century scholar and textual theorist, Jerome McGann, who is constructing an archive of text, manuscript, and images by the poet and artist, Dante Gabriel Rossetti. The historian, Edward L. Ayers, maintains a site in progress on the Civil War, _The Valley of the Shadow_. The experimental video and computer artist, David Blair, is constructing an elaborate MOO site for his WaxWeb project. IATH also offers computing resources to a roster of fellows from other Universities. In collaboration with North Carolina State University, IATH edits and publishes Oxford University Press's _Postmodern Culture_, one of the few scholarly, refereed, on-line journals in the Humanities.

IATH is the most clearly focused site for exploiting Humanities content, and manages, through a fairly simple and consistent use of HTML, to present a diverse set of issues in text editing, historical research, and film and cultural studies. It makes use of plain text and multimedia tools and depends upon a technologically aware cohort of scholars in the field to access and contribute to it.

Electronic Text Centers provide services that are often restricted to one University community, because of
licensing and copyright restrictions. They have limited Internet and Web access that provide reference and lookup services (card catalogues, and texts of the OED, Shakespeare, and other literary works that can be searched). A few present graphical images of manuscripts Offline, centers such as the Electronic Text Center of University of Virginia's Alderman Library and The Center for Electronic Texts in Humanities (a joint project of Princeton and Rutgers Universities, which is also part of the Text Encoding Initiative) are undertaking major initiatives in digitizing manuscripts and creating authoritative texts using SGML. They are helping to solve the matter of editorially dependable computer-accessible texts.

Much literature appears on the Internet--novels, poetry, and drama--but little of it is of dependable textual authenticity. It will be crucial for Electronic Text Centers, perhaps in conjunction with publishers, to create a body of authorized, searchable texts with access mechanisms universally available.

There are other, scattered networked projects. A recent Web site, established by the University of Chicago and Notre Dame, exhibits manuscripts by Dante. Art exhibits proliferate, and the best design remains that of the Web Louvre project by Nicolas Pioch. The Getty Museum's multi-university initiative to explore networked access art should help in organizing strategies and methods for access to images of paintings in a networked environment.

The use of commercial software packages, and in some instances, the creation of original software, to produce information access programs, multimedia projects, and teaching modules in the Humanities is wide spread, but not widely dispersed. There are well-established programs, such as the Max MIDI composition program that uses C language in an object-oriented environment to produce composition modules. The Perseus Project from Harvard uses CD-ROM for multimedia research in ancient Greek history and literature. The Academic Software Development Group at Stanford University has developed Media Weaver, a management system for hypertext retrieval both off and on-line that is currently being used for projects as diverse as Chaucer's poetry and a history of Silicon Valley.

Peter Donaldson, Director of MIT's Shakespeare Multimedia Project, has developed a Mac-based interface that matches the Shakespearean text with moving images (from laserdiscs and Quicktime files) that are drawn from various filmed versions of the plays. The project allows the students to compare different readings by different filmmakers and their actors in ways that explain not only the text, but the varieties of cinematic interpretation. It offers interesting interactive potential by allowing students to grab and arrange still images onto their own notepad windows.

Cinema would seem a natural subject for computer-accessed study. The ability to digitize moving images and combine them with text within an interactive design is being explored by a number of scholars. Some are using a computer interface with laserdisc to create analyses of a single film (such as The _Rebecca_ Project, by Lauren Rabinovitz at Iowa and Greg Easley, which analyses the Hitchcock film from a number of critical and historical perspectives). Others, such as Robert Kolker of the University of Maryland, are experimenting with critical essays using moving images, published on the Web, and multimedia explorations of the basic cinematic vocabulary, using digitized clips and authored in Asymetrix Toolbook.

- Language learning and linguistics are fields of major exploration, and there are a number of interactive projects based on both existing and new software.

- Because of their pictorial representations, Asian languages have received special attention in multimedia teaching programs. Ohio State University and University of Maryland's University College are creating a multimedia version of a standard Japanese text book in a project funded by the Annenberg-CPB Project.

- Linguistics studies are involved in developing computer assisted principle-based parsers (which can give structural descriptions of sentences in more than one language). A database of children's spontaneous speech
known as CHILDES has been developed at Carnegie-Mellon University with NSF funding.

**Future Research Needs**

This very brief and selective survey indicates the plurality of tools and content developed in computer based and computer assisted Humanities research. What it does not reveal are the intense efforts being made, and still to be undertaken, to bring this work to students. Many projects are made for student interaction, but interface designs are as diverse as the projects themselves--requiring skills specific to the project--and student access to computer facilities are far from universal. A very few Colleges and Universities provide every incoming student with a computer. Others have developed computer lab facilities in which students can do their work. Relatively few have interactive computer teaching theaters where faculty and students can mediate their computer training in close association of human and machine.

The need for access to hardware is coupled with in even greater need for access to training. There are major curricular issues at stake if computer-aided research and pedagogy is to expand. Introductory courses in computation need to be developed for all students outside of the usual Computer Science curriculum. The majority of Humanities faculty need to be trained in graphical environments so that they can begin to take part in multimedia authoring and access to existing Humanities content.

Work is needed on ways to bring the necessary training to Humanities scholars that will 1) bring them up to speed on the ways in which computers can aid their research; 2) make them comfortable with computer-based tools; and 3) identify and encourage those who wish to do advanced work in creating tools for teaching and research. This must be carried on concurrently with research into the kinds of design that would be most best for Humanities users.

A major barrier to these users is the lack of interface standards and the need for specialized skills to create and access content. As we said at the beginning, the work of the Humanities is a diverse undertaking with multiple points of view and multiple contents. It is an area of many specializations, the practitioners of which may not have the skills or the time to devote to authoring and programming. The entry barriers need to be lowered. Development of standards for multimedia authoring and usable interfaces that can be easily modified to accommodate a variety of contents would be extremely useful. Sound, image, and video capture must be simplified and standardized, as should the programs for integrating them. Not all universities have software development units available to faculty. Minus those, all interested faculty should be able to access simple, universal tools. HTML and the World Wide Web offer one possibility. Stand-alone applications need to incorporate a similar, even easier, set of standards.

Such work, ideally, would combine the talents of computer scientists, human-computer interaction researchers, and humanities scholars developing content and tools. Once accomplished, computer technology would facilitate the needs of the Humanities and be in harmony with the diverse, exploratory nature of its work.

*Respond to the papers*

*Join the discussion*

Last revised: 1995-10-13