The online language learning environment:
New roles for the humanist

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Thomas Edison played an important role in improving the technologies needed for the telephone. He was said to have been excited about the educational potential of the new instrument and speculated that it would soon be found in every classroom.

Well, he was right about the educational potential of information and communication technology, but he was wrong about the form the new technology would take.

This chapter raises questions concerning the role humanists will play in determining the development and implementation of information and communication technologies for educational purposes.

I assume that most scholars working in the field of language and literature acknowledge the *potential* of the new technologies.

- The digital medium permits rapid dissemination of images, sound, and text that can be combined creatively to provide new insights into language use across cultures.

- Online databases of multimedia linguistic materials are stimulating new approaches to scholarship and attracting interest from both the public and private sectors.

- Modern mechanisms for rapid knowledge transfer alter the time frame in which research circulates in the academic community.

For many humanists the difficulty with participating in this excitement lies in understanding the *implementation* of the new technologies in one's own academic field. Generalizations about the features of a new technology are seldom appreciated until its benefits are demonstrated in a given academic context. We may therefore expect a relatively long period of experimentation as scholars explore the possibilities, because gathering all of the relevant factors

into a plan of action is not easy—and because it is not possible to predict the purely technological innovations in the computing industry that shape the teaching and research environment in which humanists work.

Developers of academic "courseware" are caught up in changes over which they have little control. Here are some examples:

- The regular appearance of new and improved computers makes it necessary to adopt life-cycle budgeting. This generally requires an institutional commitment that goes beyond what can be determined at the departmental level.

- Periodic changes in operating systems require regular updating of source code. This in turn means new documentation and field-testing for courseware, functions that the traditional scholar is ill-equipped to perform.

- Periodic upgrades to middleware and authoring tools require patches to the installed base of courseware. Upgrades can be accomplished through the Internet, but a network manager is needed to handle requests for service.

Academics working alone simply cannot afford the time required for maintenance without abandoning their other scholarly duties. Commercial publishers of academic software—for the reasons cited above—have found it difficult to obtain the profit margins they need and have not generally been reliable sources of quality assurance for courseware.

In a word, humanists are generally just not set up to do business in the new information age.

All science is computer science

Academic computing is a subsidized business, one that requires institutional commitment and a plan for generating grant money.

Historically, "big science" has been in a better position to compete for subsidies than have the humanities. A headline the *New York Times Week in Review* for March 25, 2001 read, "All science is computer science." Leading researchers in physics, molecular biology, chemistry, neuroscience, sociology, and even anthropology use computer modeling to test their hypotheses. The vanishing border between what we consider "real" and "virtual" strikes

humanists as both fascinating and troubling. Humanists have no difficulty understanding and appreciating the value of virtual worlds created in the mind. But it is startling to be so far removed from the technology that modern scientists use to test their view of the world, what they call "isomorphism with reality."

Humanists will have to grapple with the questions that all scholars are likely to face in the coming years as they contemplate what, if anything, information technology can do for a particular discipline. I suggest that information technology—with its ability to provide access to oral and written texts along with culturally authentic images—is particularly relevant for language and literature study. But it will not be possible to pin down in a brief paper all of the technologies that will affect what we do. Indeed, trying to get a close look at what technology can do for research and teaching reminds me of the photographer obsessed about getting a close-up shot of the horizon.

The important insight, in my opinion, is that we are going through a period of rapid change in the medium in which we conduct our teaching and research. The new medium is digital, and that makes a difference in the way we will have to set up to do business. No matter that an introduction to computing and information technology was not in the curriculum when we were schooled! Information vital to our functioning as scholars is rapidly being transferred to digital format. We must deal with this new reality in at least three areas of the scholarly enterprise—the creation, archiving, and dissemination of knowledge.

Under current systems of academic governance, the humanist can serve a role as translator or interpreter between two distinct groups, those dedicated to creating content and those dedicated to building infrastructure. This opportunity exists because technologists have nothing to say about research or teaching, and the discipline-oriented academic has nothing to say how to build, say, a client-server facility. But an effective interface that links infrastructure with content is vitally important, and it cannot be done without sustained collaboration (Noblitt 1995, 1997). By fostering that collaboration the humanist can modulate the new technological forces to create intelligent uses of it for research and teaching.

Lessons from the past

The current transition to the use of digital media is not the first time educators have had to deal with social changes brought about by information technology. Book production burgeoned after the introduction of the printing press as printing presses sprang up all over Europe. Elizabeth Eisenstein points out that a person born in 1453, the year of the fall of Constantinople, could look back at the turn of the century on a lifetime in which some eight million books had been printed. Eight million books in 50 years represents "more perhaps than all the scribes of Europe had produced since Constantine founded his city in A.D. 330" (Eisenstein 1998, 13).

The first impact of the printing press was to increase confusion. Many points of view came into conflict, with the result that studies were commissioned to determine who had the right facts. Printed translations of the Bible, widely circulated and compared, caused scholars to doubt the power of philology to determine the word of God. Modern science can be traced to the moment when the desire for the truth led scientists to seek it not in words but in the book of nature.

The change brought by typographic culture was revolutionary, so it is perhaps worth our while to review a half dozen implications for humanists occasioned by the introduction of printing in the second half of the fifteenth century.

1. The printing press brought about *social change*. Scholars came into close contact with diversely skilled workers in the print shops. This amounted to a new kind of "cross-cultural interchange" that required humanists to get ink on their fingers, so to speak.

> Thus it is not uncommon to find former priests among early printers or former abbots serving as editors and correctors. University professors also often served in similar capacities and thus came into closer contact with metal workers and mechanics. Other fruitful forms of collaboration brought together astronomers and engravers, physicians and painters, dissolving older divisions of intellectual labor and encouraging new ways of coordinating the work of brains, eyes, and hands. (Eisenstein 1998, 24)

2. The printing press created a *repurposing of skills*, especially for the philologist. Citing a seventeenth century treatise by Joseph Moxon, readers or "correctors" of page proofs needed to know a dozen or so languages—including English, Latin, Greek, Hebrew, French, Spanish, Italian, and High and Low Dutch. Johns explains that the compositor in a scholarly printing house did not simply put manuscript copy into print.

> A good compositor must therefore actively "discern and amend" his "*Copy*." He must take care not to reproduce letters mechanically, but to "read" his copy "with consideration." By this Moxon meant that he must "get himself into the meaning of the *Author*," and then use typography to make that meaning clearer than any author could. (Johns 1998, 88)

3. The printing press brought *new economic considerations*. According to Eisenstein, in 1483 the Ripoli press charged three florins per *quinterno* for printing a translation of Plato's *Dialogues*. A scribe might charge one florin for the same work. The difference is that the scribe produced only one copy, the Ripoli press 1,025.

The economic lesson was not lost on the educational establishment. The printed book became a commercial success through its ability to combine scholarship and teaching in a useful way. Ong (1983) points out that while textbooks transmitted the scholastic and humanist heritage, they also modified it. Pierre Ramée (Petrus Ramus) created books designed to teach abstract notions to students by creating an analytical framework that could be visualized and therefore more easily committed to memory. The writing of textbooks soon became a profitable and influential genre.

> The mere preparation of differently graded textbooks for teaching varied disciplines encouraged a reassessment of inherited procedures and a rearrangement of approaches to diverse fields. (Eisenstein 1998, 71)

4. The printing press introduced the scholarly value of *multimedia*. Printing was a "double invention," combining pictures and text in exactly repeatable form.

The fact that letters, numbers, and pictures were *all* alike subject to repeatability by the end of the fifteenth century needs more emphasis. That the printed book made possible new forms of interplay between these diverse elements is perhaps even more significant than the change undergone by picture, number, or letter alone. (Eisenstein 1998, 24)

5. The printing press made *quality control* an immediate issue. Numbered pages, indexes, cross-referencing, concordances, and library card catalogs evolved to enable scholars to manage the print explosion. Editorial practices evolved to increase the reliability of what made its way into print. Johns points out that the printing press did not bring immediately the ideal of perfectly replicated texts.

There were, it has been estimated, some twenty-four thousand variations in the text of the King James Bible between its first printing and the 1830s. The myth of the standardized impression did not survive the reality of the printing house. (Johns 1998, 91)

There were, of course, misprints. The infamous "wicked Bible," printed in 1631, contained the commandment, "Thou shalt commit adultery."

6. The printing press made *intellectual property rights* a pressing matter indeed:

In the agonistic field of early modern natural knowledge, allegations of piracy readily shaded into charges of plagiarism. Such allegations therefore extended to the reputations of scholars. That is, unauthorized printing threatened to "unauthorize" authors themselves. Even more important, it threatened the credibility to be attributed to their ideas. Like print itself, piracy therefore had *epistemic* as well as *economic* implications: it affected the structure and content of knowledge. For an enterprise like experimental philosophy, in particular, which depended implicitly on the trust accorded to the printed reports issued by its protagonists, the consequences threatened to be nothing short of devastating. (Johns 1998, 33)

The last point bears emphasizing. Purely *technological* innovations had to be accompanied by *sociological* innovation for the technology to realize its potential. The Royal Society, under Isaac Newton, invented mechanisms for creating documentary evidence that natural philosophers could credit and provided "a location where the accepted conventions of polite society would be

visibly and reliably observed at all times" (464–65). In so doing, the Royal Society, in Johns' words, redefined the powers of print.

And now this

If we review the half dozen issues for scholars introduced above (and enlarged upon in the references), the list seems quite modern. All we have to do is insert the word "Internet" for "printing press" to generate the following list:

1. The Internet is causing *social change*. Scholars need to team up with specialists in computer science and in network services to convert their scholarly materials to digital form. The conversion requires new data structures and innovative elements of interface design. The World Wide Web facilitates collaborative research in a radically foreshortened time frame.

2. The Internet creates a need for *repurposing skills*. The philologist who can communicate with network managers, graphics designers, and database programmers is suddenly in demand in language and literature departments, to judge by recent listings in the job bank of the Modern Language Association. This is because it is easier for a philologist to learn computing than for a programmer to learn philology.

3. The Internet brings *new economic considerations*. Scholars can no longer depend solely on commercial publishers to meet their needs for timely and economic publishing of materials for research and teaching. Models for distance education over the Internet, to cite an example of current interest, appear to put universities in competition with textbook publishers. Educational publishers, meanwhile, are creating an amalgam of Web sites and printed textbooks, but they report that the business case is difficult to formulate.

4. The Internet has introduced the scholarly value of *multimedia*. The digital medium supports interactive and pedagogically useful control of image, sound, and text. This fact has alone has enormous potential for research and study in language and literature. The possibilities for direct observation of language variation, to name just one example, have been greatly expanded.

5. The Internet makes *quality control* an immediate issue. By eliminating the role of scholarly typesetter and altering the role of scholarly editor, online

publication creates a faster but more error-prone means of distribution. Mechanisms for ensuring the reliability and authenticity of online scholarly publications have yet to be invented.

6. The Internet makes pressing the need for guarantees of *intellectual property rights*. Image, sound, and text files in digital form are inherently easy to replicate and distribute. Copyright laws designed for the print medium may not be adequate for the protection of creative work in the digital medium. The sheer volume of online material makes its difficult to detect plagiarism.

Clearly the social, legal, and economic issues introduced by modern technology will require at least some fine-tuning on the part of the educational establishment. Where does the scholar turn for assistance in embracing the new media for his or her work? What role will professional societies play in creating the sociological counterparts to technological innovation? Will the economic implications of distance education, to take one example, lead to a redefinition of what is meant by a "university"? The individual scholar must contemplate the professional implications of converting from a life as scholar mendicant (with social support) to one of scholar entrepreneur (who must find funding).

The scholar entrepreneur takes an active role in creating a meaningful environment for research and teaching, and this naturally involves having a voice in resource allocation. Assuming (safely, I believe) that the mission of higher education will not be fundamentally altered by the digital medium, what kind of advocacy does the new medium entail for scholars?

- An adequate information technology *infrastructure* is vital. Its design will require the active participation of scholars concerning interface design for research and teaching. Academic units specializing in language study will need to communicate instructional requirements and assist in their implementation.

- The solutions arrived at to protect *intellectual property* in the print medium will need to be revisited for the digital medium. It is likely that webcentric learning environments will continue to grow. But there are delicate issues of ownership and quality control for which authors and their institutions will need clear contractual agreements.

- Information technology creates new issues for *professional development* for scholars. Conditions of employment, including contracts for hiring, tenure, and promotion need to be worked out. New definitions of "publication" will be needed as institutional repositories compete with commercial online publishers of scholarly research.

It appears clear that the scholar in the digital information age is faced with a much broader task than simple research and teaching. The emerging generation of entrepreneurial scholars is being asked to define institutional as well as discipline-based definitions of an academic career.

The classroom as laboratory

Innovation often brings improvements that are difficult to discern in the midst of change. For example, the shift to typographic culture led to a new sense of system, planning, and design as people began to create new syntheses of knowledge. An analogous increase in workload for scholars is taking place now as we begin to convert our knowledge to the digital medium.

But our task as humanists is to keep our heads up. The effort seems worthwhile when we get new insights from, say, a hypertext document or the results of a search on the World Wide Web. Language specialists in my department are impressed by the amount of primary material available on the Internet concerning the Romance languages and their dialects. Popular culture is particularly well represented in image, sound, and text.

Scholars have traditionally used information technology to create a kind of guild that transcends nationalities and religious differences in pursuit of truth and beauty. The Internet appears to be performing exactly this function for current scholars. The opportunity for language and literature specialists, in particular, will be to help design the commonwealth of learning for a multicultural society. The creation, adoption, and implementation of standards for transmitting multilingual texts over the Internet represent just a few of many problems to be solved.

Beyond the guild, however, Web-centered instruction promises the democratization of knowledge. Whether Internet instruction will become a new and profitable genre depends on the marriage of content and

infrastructure. But the shift in medium will certainly produce a reassessment of inherited procedures.

Against the historical background of what scholars have done with their technologies in the past, what can language and literature specialists do with current technologies? The emergence of refined materials for online learning will take time—just as textbooks took time to appear after the printing press was invented. Years of experimentation with pedagogical materials—coupled with extensive peer review, editing, and distribution mechanisms—were required before the familiar textbook reached the academic marketplace. We can expect a similar experimental phase as our professional colleagues deal with the learning possibilities offered by the Internet. Fortunately, the issues will become clearer as methodologies for online learning emerge.

As emphasized above, the invention of scholarly journals and textbooks produced revolutionary changes in the design of teaching and learning. Now that the possibilities of the new digital media are beginning to be explored in earnest, we need to examine the online learning environment to see that it fosters the learning processes required for high quality language and literature learning. The following considerations appear to be in play:

- The digital medium expands the learning environment to permit increased exposure to primary data relevant to language and literature study. Examples include sound recordings, transcripts, databases, facsimiles, photographs, and video.

- Scholarly interest in the interplay of image, sound, and text will lead to intense innovation in the interfaces that give students and researchers interactive access to the elements of language and culture study. Examples include search engines, hypermedia displays, simulation devices, and data-driven displays of information.

- The role of the faculty member in language and literature must be defined as online approaches are considered. Examples include negotiations with appropriate academic units, publishers, and technical support units.

- In the current state of information technology, scholars will need to form collaborative enterprises that provide for the effective design of language and literature learning environments. Examples include cooperation

between scholars and computer services, scholars and publishers, and scholars and professional societies.

Although the traditional classroom can serve as a laboratory for designing the online learning environment, it will be necessary to make some distinctions. Let us use the term "distributed learning" to refer to a learning environment that combines a combination of classroom, library, and online learning opportunities. This term may be opposed to "distance learning," which often refers to learning environments in which the classroom contact is missing or minimal. A distributed learning environment can consist of elements such as those listed below, which are found at my institution:

- *Multipurpose classroom*, equipped for teacher-fronted instruction using whiteboard, computer display, and Internet connectivity

- *Computer lab*, with student workstations for access to pedagogical material, reference databases, and productivity tools

- *Home or dormitory access* to servers for streaming language-study resources, course Web sites, discussion forums, and library search.

By experimenting with the distributed learning environment described above—from chalk and textbooks to word processor and Internet—we have been able to define exactly what technological innovations were effective in the online language-learning environment. Further experimentation in the traditional classroom has clarified the difference between the role of technological and sociological innovation.

The distributed learning approach has made the definition of goals a matter of ongoing discussion between faculty, graduate students, and technologists. But difficult questions persist in three major areas:

Curriculum. Many members of language and literature faculties are charged with imparting an appreciation for the humanities in connection with their teaching duties, and this concern requires a good definition of what we mean by "authentic" materials. As Claire Kramsch (1993) points out, "With the increased necessity to develop not only communicative, but also cultural competence in language teaching, the need has grown to reassess the notion of authentic text and communicative authenticity." This means that educators must identify primary and secondary source materials for their subject matter

along with the medium in which students will have the best access to those materials. Issues of both *content* and *process* are involved.

- What content works well for general (as opposed to professional) language and literature education?

- What primary observed language data available online can be appropriately incorporated into the language-learning environment?

- How does the medium redefine our notion of text?

Audience. The opportunities for continuing education and an extended learning community are particularly interesting in our field, requiring a broad appreciation of the appropriate contexts for adult learning. Nontraditional students may participate in online learning, but new social contracts may be required. For example, should language refresher courses be offered online for continuing education?

- What students are we trying to reach on campus (by local network) and off campus (by modem)?

- What access issues for the disabled can be solved with information technology?

- What institutional collaborations will be required to disseminate instruction and ensure its quality?

Method. The familiar skill methodologies that have been worked out in the language classroom—speaking, listening, reading, and writing—must be reassessed for online implementation. The traditional learning environment has provided for the processes of reception learning (primarily through lectures and books), tutoring, and learning by doing; while primary and secondary sources, reference materials, and tools for learning have defined content. Information technology has not only increased access to primary materials, it has also greatly increased capabilities for peer-to-peer communication.

- Certain elements of language and literature instruction are best accomplished synchronously (for example, through conversation), while others are best done asynchronously (through reading). What online techniques make the student more productive when in asynchronous mode?

- Certain pedagogical materials (resources, tools, self-tests) are useful in a self-instructional environment. Can online techniques be designed that are more effective than traditional approaches?

- What reference material can be provided online to support task-focused (rather than form-focused) instruction?

- What role do online discussion forums play in learner-centered instruction? Are there implications for preparing students for multicultural awareness?

Interesting times

We attribute to the Chinese an ancient curse—"May you be born in interesting times." There is no doubt that the information technology of the Renaissance brought both brilliant highs and appalling lows to the human condition, especially if we consider the uses of printing for both enlightenment and propaganda. In time, we learned to discern good writing from bad, to make a distinction between medium and message.

This chapter has raised issues that confront the humanist as knowledge in the digital medium transforms the content and the processes of scholarship. If the past is any guide, our major contribution will take the form of advocacy for the humanistic enterprise, however we may define it. The enlightened use of modern information technology will require the humanist to create *governance procedures* for intelligent resource allocation and to formulate *technical requirements* for the intelligent deployment of the digital medium for educational purposes.

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