# Teaching Culture, Learning Culture, and New Media Technologies: An Introduction and Framework

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## The Experience of Intentions

*Experience is what you get*
*when what you expected doesn't happen*.
Lee Shulman

### *What We're Talking About When We're Talking About "Intentions"*

All teachers have intentions when they design and teach a course. In many ways those intentions are a kind of hypothesis, as if to say: "If I teach these particular things, in this particular order, in this particular way, then this kind of learning will probably take place." This mostly unarticulated 'course design hypothesis' is loaded with complicated questions, and informed by a whole range of knowledge about one's subject matter, one's students, and the learning process. Yet, faculty almost never have the opportunity to look at those questions slowly. Although many faculty have the inclination to improve and innovate, few rarely have time, training, nor institutional incentives to examine their teaching systematically, and consider their *intentions* in curriculum design for all their assumptions and ramifications. Furthermore, most faculty who teach literature, history, and interdisciplinary culture courses have so internalized this process as not to recognize it as a hypothesis or design process at all, but mostly as a set of decisions about content, coverage, and materials.

The proliferation of technology in higher education has provided an opening to address our intentions in a new way. The premise of this volume, and the project it represents, is that new technologies and new

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learning environments are providing *an opportunity* for intentionality. The opportunity in part derives from the enormity of these compelling questions. "Computers," as William Costanzo puts it in the volume *Literacy and Computers*,

> are altering the way many of us read, write, and even think. It is not simply that the tools of literacy have changed; the nature of texts, of language, of literacy itself is undergoing crucial transformations. Along with these transformations come shifts in the sites of literacy. From the home and the classroom to the market and the workplace, computers are reshaping the environments in which language is learned, produced, and practiced. (11)

In the most general context, the essays and discussions in this volume all address issues of literacy: reading literature, reading the past, reading our culture, reading one's text and image-saturated environment for the explicit and implicit codes that construct our lives. The totality and complexity of literacy itself intermixes with the reconstructive nature of computing technologies to present an opportunity for reshaping what we do as teachers at an unprecedented scale.

Yet, the reshaping being traced in these essays is more than a generalized literacy. This volume is a small gesture of intentionality for a particular community (or overlapping set of communities), in the field of American Studies, in the broadest sense, with extensions of sensibility into fields like American literature, American history, Ethnic Studies, and Women's Studies. At the heart of this volume are seventeen essays that culminate a three year project that constituted the Research and Study component of the American Studies Association's Crossroads Project. And they represent in important ways the confluence and influence of the "New Media Classroom Project" of the American Social History Project/Center for Media and Learning (at the CUNY Graduate Center). Both of these projects involve faculty networks focused on exploring the potential of new digital resources to enhance learning and teaching in the American culture and history classroom.

Over this time, a cohort of these faculty around the country who were interested in experimenting with new technologies in their classrooms committed themselves not only to teaching a course with an experimental component, but focusing their attention on the *process* of teaching that course, and in particular focusing on the role of technology in that context. The purpose of the project was to advance the possibilities for using technology in the interdisciplinary culture and history classroom, but to do so critically and intentionally, asking faculty to be

observers of their own practice and to be reflective about what happened.

From the beginning we asked faculty to bear in mind a set of very practical questions such as:

> What are your objectives for introducing work with technologies into your class?
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> What pedagogical problems are you trying to solve?
>
> What are you able to do now that you couldn't do before? What is being gained? What are the trade-offs? What do you have to give up or change? Where is the "overhead"?
>
> What about particular activities most surprised you? What most frustrated you?
>
> What are you learning now that will help you make better use of new technologies next time? Under what circumstances and with what kinds of context do certain activities work better?

Underwriting these practical questions were issues of student learning and student understanding:

> How has the use of new technologies changed student learning? Has it just been access to resources and research tools? Or has there been a qualitative change in learning?
>
> Can new technologies play a role in facilitating the teaching of higher level skills of disciplinary and interdisciplinary analysis to novice learners in culture and history courses?

We recognized from the beginning that questions linking *knowledge* and *learning* cannot be answered glibly. And, quite frankly, they are not the kinds of questions that higher education—as a whole—has ever paid much attention to. With a few notable, often marginalized exceptions, higher education has long condescended to matters of teaching and learning, and as a result, in most fields, including culture, literature, and history education, there is a dearth of benchmark data on how students learn in more traditional environments, with more traditional

technologies and approaches. Higher education's impoverished record for taking learning seriously makes it that much more difficult to slow down and ask rigorous questions about the impact of new technologies in learning.

Taking the occasion of the 'technology revolution' as an opportunity to slow down is even more difficult given how counter-intuitive intentional and deliberate action might be in the realm of educational technology. Higher education is abounding in uncritical, blinding-speed endeavors which adopt new technologies for teaching and learning. Asking how teaching and learning might be enhanced in light of new learning environments is a very complicated question, and cannot be approached as if the solution lay simply in the implementation of particular approaches, the application of the right program, or short term faculty training. Too commonly the approach to technology and teaching proceeds fragmentarily. Discussions of technology are separated from pedagogy; discussions of pedagogy are isolated from disciplinary practices and methods; and overall, forms of innovation are approached piecemeal, and only rarely taken up as investigations into effective practice and matters of intellectual inquiry. What is needed is an integrative and comprehensive approach that treats questions of teaching, learning, and technology as seriously as matters of scholarship and research.

## *The Distribution of Questions*

It has never been the assumption of our project that we were 'discovering' pedagogy for higher education. Both the Crossroads Project and the New Media Classroom Projects have roots and precedents in some important contexts, especially two: the field of computers and writing (and its parent field of rhetoric and composition) in higher education, and a number of pioneering projects and research on constructivist learning approaches (both with and without computer technologies), mostly in K-12 contexts.

Certainly, many of the questions raised in this volume have been raised by these earlier communities. Our questions about reading, writing, collaboration and dialogue owe much to the computers and writing, composition, and literacy field, as well as the writing across the curriculum movement. Similarly, our emphases on constructivist pedagogies, and constructionist activities such as hypertext writing projects, virtual exhibits, and the creation of active and collaborative learning spaces owe much to "discovery" models of education that characterized work from diverse school-based research and practice, such as the work of Seymour Papert at MIT, the CSILE project, the Center for

Children and Technology, Project ACCESS and Intermedia at Brown University, and Project Zero at Harvard.[1] While benefitting from these important influences (often so internalized as to become good pedagogical practice without a clear sense of attribution), the faculty in this project explore these questions in different contexts, refracted through the lens of what we call—for the purposes of this volume—the 'culture and history fields.' Some of these 'discipline-oriented' questions—as they were articulated from the beginning of the project—include:

> How do new technologies transform what we think of as the object of American Studies and related fields?
>
> How do new forms of access to the cultural record alter modes of making knowledge? What impact do electronic representations of culture and history have on the construction, interpretation, and critique of cultural narratives and meta-narratives?
>
> How will the availability of online archival (primary) historical and cultural materials reshape the role of narrative inquiry in interdisciplinary cultural studies? How might expanded access to resources make an impact on issues of cultural canons and the expansion of content in curricula and scholarship?
>
> How is interdisciplinary study transformed and enhanced by interactive multimedia and hypertext technologies?
>
> What are the affinities between the discourses of interculturalism (identity and difference) and the capabilities of dialogic and interactive technologies?
>
> What role will global technologies play in questions concerning national studies in a postnational context? Where are the intersections between the shifting boundaries between American Studies, Cultural Studies, Ethnic Studies, and other interdisciplinary fields and the proliferation of global technologies, which foster both internationalization as well as focused, electronically connected communities?

> What kinds of critical and cautionary questions should we be asking about the use of new hypermedia technologies and the study and teaching of interdisciplinary fields?

Classroom reflections like those represented in this volume can only make a tiny contribution to these questions, but we hope an important one. And the extent to which the other communities—computers and writing, rhetoric and composition, K-12 education—are asking similar questions reflects the compelling need for greater cross-field and cross-context conversation about pedagogy and technology, as all of education starts to careen into the integration of technology.

By invoking these broader, theoretical and methodological questions as the critical contexts for practical classroom observation, we want to emphasize the two-way flow of influence between matters of pedagogy and the changing objects of study in the culture and history fields. Traditionally, the knowledge structures of a field shape its pedagogy. But we believe that in the electronic age, the pedagogical dimension will have a shaping influence on knowledge representations as well. That is, more than ever before, the responsibility for making and representing knowledge will be constituted by what Michael Frisch has called a "shared authority," and shared responsibility among schools, museums, cultural institutions, and other public venues. The clear distinctions between academic and non-academic, expert and amateur, the classroom and beyond, are eroding. New technologies make cultural and historical knowledge *visible* in new ways. "The Internet," as Gregory Jay puts it in his response essay in this volume, "makes a meta-disciplinary intervention," whose impact not only affects the legacies of multicultural and postcolonial movements, but "every portion of the disciplinary field, and does so at multiple levels—of conception, of methodology, of pedagogy, of institutional formation, of dissemination, of public perception" (393).

Thus, addressing these broad questions is *community* work. And it is critical that day to day, semester to semester classroom transformations be considered integral to this communal work. Indeed, this volume is first and foremost a project for a particular set of communities connected through their disciplinary and interdisciplinary culture and history contexts. In this sense, this project is very much in the spirit of this journal, *Works and Days,* and the 'cycles' project (with its 'post-disciplinary' conversational model) at the heart of it. That is, this volume represents not a set of statements or solutions, but a set of problems (or problematics) undertaken by a particular community. Intentionality in the curriculum is a collective, not an individual act.

And of course, the fundamental intentionality here is political. In many ways, this project represents a community of scholars and practitioners wrestling with their values about education, and the possible alignment or disjunction of those values with new media technologies. In *Computers and the Teaching of Writing in American Higher Education*, Gail Hawisher (et al.) describe the fundamental values driving the computers and writing movement:

> The community has had an agenda: the need to develop a view of how computers could help writing teachers move toward better, more just, and more equitable writing classrooms and, by extension, to a better, more just, and more equitable system of education–and, insofar as education incubates culture toward a better society. The community has understood from its beginnings that it needed to develop such a view because manufacturers, publishers, and educational administrators were developing their views, driven by motives that were often different from ours. If the community of teachers and scholars did not develop its own understanding of how computers should be integrated into the enterprise of teaching writing, it was certain that others would do so. At issue was, and still is, the character of literacy education and of American society. (2)

There is, we believe, a similar (and indeed related) agenda here. The subjects and emphases in the courses examined in this volume are focused primarily on a congeries of issues related to a better informed citizenry and an educated democracy. Informed by values of multiculturalism and inclusive and critical approaches to cultural and social history, all the teachers and scholars in this volume understand that the only way to control the forces of new technologies down the path of least resistance is to understand the potential and perils from the inside. However inchoate, however preliminary, the questions and provisional answers here in this volume form an initial line of defense against the threat of being shaped by the 'technology revolution'—a defense that involves faculty in the process of becoming themselves shapers of this transition. In this sense, too, we believe that this volume has a lot to offer across intellectual communities, creating opportunities to take part in the rich dialogue about literacy, education, and technology.

Of course, these questions of whether we are shaping, or being shaped by, new technologies are also playing out in a context in which the boundaries of the disciplines of culture and history are changing their shape as well. We have divided the case studies in Section II into

three areas: Literature, History, and Interdisciplinary Studies. Even that division has many variations as several of the essays bridge boundaries and disciplinary contexts, whether it is an interdisciplinary nineteenth-century women's literature and history course, an oral history course that is also multicultural and ethnic studies, a history course that is also African American Studies, or American Studies courses that combine multiple disciplinary perspectives. Disciplinary and interdisciplinary heterogeneity is valuable because it provides a broad base from which we might ask these pedagogical questions, and because it represents the fluidity of the boundaries of the disciplines which underlie these essays' focus on the use of new technologies.

Ultimately the most fundamental question is this:

> What are the roles that new media technologies can play in addressing the changing nature of knowledge and learning in American Studies and related culture and history fields?

Behind that question are several others: What is the relationship between an interdisciplinary approach to American literature or American history and American Studies? What is the relationship between those field-based conversations and what is happening in the classroom? What do those distinctions look like to students who pass through our classes?

And of course,questions of disciplinary knowledge and boundaries—as writing across the curriculum theorist John Bean has argued for some time—are questions of literacy. "Knowledge is 'known' through the discourse of the community that creates it—a multivocal conversation of differing perspectives seeking consensus" (48). Literacy—in all its traditional and new forms as critical thinking, writing, and reading—is *disciplinary* in that it is rooted in the fundamental ways of knowing of expert learners. Translating the questions of disciplinary and interdisciplinary knowledge for students is—as Bean suggests—at the heart of the strategies for engaging students in making 'problems *problematic*.'

In what ways, then, does the necessity or utility of new electronic tools emerge from the conjunction of theory, method, content, and pedagogy? Early on in the electronic discussions of the research project, as a component of the first Working Synthesis for the research cohort, Bass wrote:

> I think one of the broader goals of our project will be to identify the 'affinities' (context by context) between the capabilities of information technologies and other dimensions of theory, method, and content in American Studies

> and related fields. The overarching question for me is this: Do new paradigms require new pedagogies? And where are those new pedagogies and paradigms served by the ways that information technologies 'can' reconstruct the learning environment and make malleable (and accessible) the primary materials of the field? In what kinds of contexts, under what circumstances, and through which scenarios, can the values of revised and reconstructed cultural studies (over the last 25 years) be better realized with the application of information technologies than without them? (See Appendix A.)

One way to think of the electronic future of cultural and historical study is through what we call a 'convergence of distributions,' or the convergence of 'distributive tendencies,' in three key areas: the 'distributive communication' of interactive technologies, the development of a 'distributive epistemology,' and the growing emphasis on 'distributed learning.' As these three converge they will powerfully remap what it means to study and learn culture and history.

This distributive effect, the shift from a one-to-many to a many-to-many model of communication is one of the most important features of the new media, and provides the fundamental groundwork for a great many changes in social structure and subject formation. The implications are also profound for knowledge-making practices of academic disciplines. In contrast to the McLuhan-esque model of broadcast communications—where tele-media shrinks the space between points of reception—interactive media has an additional counter-effect of enlarging the space in which communication can take place, thereby enlarging the space in which scholars and students can conduct their intellectual work. The enlarged space of interactive media enables the visualization and manipulation of objects, as well as the capacity to experiment with textual arrangements, organization, and argument. What is potentially 'distributed' in interactive media is not just the ability to 'talk back' but the ability to produce and reproduce knowledge.

Less rapid, but just as profound as the advent of a 'second media age', are the paradigmatic changes that have occurred throughout the constituent fields of American cultural and historical studies over the last thirty years. One way to think about these changes collectively is through the evolution of a 'distributive epistemology.' By that phrase, 'distributive epistemology,' we want to imply several things. First, and most broadly, we mean the general opening up of what counts as a culture's history—broadening beyond a narrow view of intellectual or political history, or canonical and aesthetic approaches to literary

expression. Well known to all of us is the expansion of cultural and historical studies to include social history, so-called 'bottom-up' history, the history of the marginalized and excluded, the expanded literary canon, as well as the mainstreaming of the study of everyday life and the extreme widening of the definition of what constitutes a readable cultural artifact. This all adds up to a 'distributive epistemology' because where we look for our knowledge—what counts as viable evidence of cultural meaning—is more widely distributed across fields, text, objects, and populations than ever before.

There is a second sense for a 'distributed epistemology' implied by the first that extends to the notion of subjectivity and perspective (or more accurately, intersubjectivity and multiperspectivism). Regardless of where one is situated across modernist or postmodernist constructions of this problem, all cultural and historical analysis takes place in a context of academic inquiry that has challenged the unity and integrity of a single 'voice' speaking in isolation or autonomy. Whether practiced as an analytic methodology or not, the context of cultural criticism challenges that texts (and subjects) be seen as 'distributed' across the texts that construct them and to whom they are addressed.

Finally, both the first and second senses of a distributed epistemology further imply a third distributive condition within cultural and historical knowledge: that abandonment of the dream of a unitary cultural narrative and the possibility of writing a single 'history' of a 'people'. In this sense, knowledge is forever distributed across a plurality of cultural experiences and texts, without the prospect of being remade into an explanatory coherence except in the context of its own multiplicity, complexity, and contingency.

At the same time that the culture and history fields have undergone a distribution of epistemology, there has been (at least in the United States) a concomitant shift in pedagogical practice that might be called (for the sake of parallelism) 'distributed learning.' Distributed learning is a general term for a range of practices that includes student-centered pedagogies and process approaches to learning. Practices that encourage collaborative work, the development of ideas and skills rather than the exclusive emphasis on finished product, approaches that emphasize discovery over instruction and the distribution of authority in the classroom from the teacher to the students, are all implied in the phrase 'distributed learning.'

'Distributed learning' has roots in a variety of student-centered pedagogies, and in particular, within the humanities, in feminist pedagogy, radical teaching, multicultural education, rhetoric and composition, and a whole range of collaborative, cooperative and problem-based learning methods.

Much of what is suggested by distributed learning can be captured in the combination of collaborative and constructivist approaches to learning, with their implications that knowledge "is built by the learner, rather than supplied by the teacher" (Wilson 93). The two approaches can combine for many different methods, all emphasizing the capacity to distribute the responsibility for making knowledge in the classroom among students and teacher. There are numerous manifestations of distributed and constructivist learning, many of which are represented in this volume: variations of *problem-based learning* (which in this volume is most closely tied to what we call *inquiry learning*); varieties of collaborative learning, ranging from team projects to peer critique to broad contexts for fostering 'distributed cognition'; and multicultural pedagogies that emphasize the recognition and critique of 'situated' knowledge and the relationship between perspectivisim and universalism. Taken together these distributed approaches all offer productive symmetries between constructivism as a pedagogical philosophy and a belief in the socially constructed nature of knowledge. The two can converge through the design and use of new media environments. For example, Peter Honebein, an instructional designer, suggests that "designers of constructivist learning environments live by seven pedagogical goals":

1. Provide experience with the knowledge construction process.
2. Provide experience in and appreciation for multiple perspectives.
3. Embed learning in realistic and relevant contexts.
4. Encourage ownership and voice in the learning process.
5. Embed learning in social experience.
6. Encourage the use of multiple modes of representation.
7. Encourage self-awareness of the knowledge construction process. (11-12)

Clearly, these goals for the design and use of digital learning environments could apply to the totality of any learning context dedicated to student-centered, constructivist goals. And it is easy to imagine how these precepts could apply in the context of learning (i.e., the 'knowledge construction process'), as they could to cultural semiosis (i.e., the social construction of knowledge). If, as Bruce Marlowe and Marilyn Page put it, "the main proposition of constructivism is that learning means *constructing*, creating, inventing, and developing our own knowledge" out of the information we are exposed to and have available (10), then it is easy to imagine how, in the right pedagogical context, the developmental processes associated with constructivist approaches could also include focusing on the theoretical, even political, dimensions of the production of knowledge.

Many of these same connections are at play when looking at the fields of rhetoric and composition, literacy studies, and more specifically computers and writing, and their complex and nuanced history with 'distributed learning.' There are at least three dimensions—or challenges—growing out of this disciplinary history and practice that bear directly on the conversations in the interdisciplinary fields of culture and history:

(1) *The movement beyond the 'process' writing paradigm (rooted in assumptions of innate ability and individual cognition) to a 'post-process' paradigm of literacy, stressing the social and distributed dimensions of literacy*. Increasingly, over the last decade, literacy and communication, and in many ways, learning in general, has come to be seen as a social act. This has worked in two ways: in the sense that individuals learn to communicate through a series of negotiations with different socially constructed discourses; and also that cognition itself is often distributed among networks of individuals. Teachers of literacy and writing studies are seeking to understand the ramifications of moving from a pedagogy of individual expression to a socialized model of writing and cognition. There are interesting cross-connections from this very major shift and the increased use of distributed cognition in culture and history fields.

(2) *The alignment of theory and pedagogical practice with respect to the multiplicity of identity and subjectivity*. Following on the implications of moving beyond 'process writing' and individual cognition models is the challenge of reconciling theories of subjectivity and identity—with regard to fragmentation, multiplicity, and contradiction—with pedagogical practice. This challenge is just as salient in literacy and composition studies, as it is in an interdisciplinary field like American Studies, Cultural Studies, or any ramification of 'critical pedagogy.' As Lankshear, Peters, and Knobel put it, "practicing critical pedagogy in cyberspace must build upon sophisticated notions of multiplicity" (160). But in what ways and to what extent? To what extent ought pedagogical practice enact the increasingly theorized fluidity of the subject? The question also has its implications for interdisciplinary approaches to history: what are the tensions and balances of the multiplicity—and unknowability—of historical narrative, and the need for coherence as a pedagogical strategy? In what ways must any emergent historical knowledge be presented through its own self-effacing constructedness, what historian Robert Berkhofer, Jr. calls "reflexive (con)textualization"? In short, how do we reconcile distributed knowledge with distributed learning?

(3) *The challenge of remapping classroom practices into networked spaces*. This challenge was first met by the rhetoric and composition

field in the transition from traditional writing classrooms to networked classrooms (a transition the 'field' began about 15 years ago, but one that not all writing teachers have made). With the explosion of the Internet, and the variety of distributed communication spaces (both synchronous and asynchronous), it is clear that the location for literacy development is not the networked classroom per se , but the 'network.' A range of challenges arises then for all teachers of reading, writing, and culture for making the best use of these distributed learning spaces in ways that extend underlying knowledge structures premised on the fluidity of disciplinary boundaries, new approaches to identity and subjectivity, and the expansiveness of what constitutes cultural knowledge and cultural texts.

The 'convergence of distributions' in the culture and history fields is very much influenced by these challenges, including a more generalized expansion of the idea of literacy beyond verbal texts. Yet, with the institutionalization of technology in higher education, the permutations of 'distributed learning' or 'distributive learning' as theoretically-generated innovations are being diffused in much less radical ways. In many ways, 'distributed learning' is developing as a synonym (or pseudonym) for what has been called 'distance education.' At its best, the most generalized sense of 'distributed learning' refers to any form of communication-intensive, or writing intensive, course delivered at least in part through technologies which allow the teacher and students to be in different places at different times. This most general meaning, called by Dickie Selfe, Art Young, and Donna Reiss "Electronic Communication Across the Curriculum" (ECAC) is promising in its ability to bring emphases on communication-intensive and writing-intensive learning to a wide variety of fields.

In the rapid institutionalization—and technologization—of higher education, there are of course perils and limitations. And with that in mind, we don't want to overplay the potential of the 'convergence' of these distributed tendencies. Others have invoked the idea of convergence as a core concept in technology integration. George Landow speaks of the convergence of technology and poststructuralist literary theory; Richard Lanham speaks of the "remarkable convergence" of democracy, technology, the new digital arts, theory, and the university curriculum. And indeed, the term 'convergence' has its own currency in the realm of the computing technologies industry, referring to the fusion of multiple technologies into single, unified apparatus.

We believe that ultimately the key to making something of this convergence in both the classroom and in cyberspace is—not surprisingly—*intentionality*. Again, to cite Lankshear, Peters, and Knobel, speaking of the potential of cyberspace for enacting a 'critical pedagogy':

> Within the characteristically self-directed, purpose and interest-driven communications of cyberspace, cyber citizens enjoy uncoerced opportunities to make *explicit* their individual and collective purposes and means to achieving them. Collaborative partners—who they are, what they are, and what makes them partners to practice—also become explicit in the process of building such virtual communities of practice. Explicitness provides here the key to *understanding*. Understanding is grasping what you are wanting to do (achieve, etc.); why you want to do it; how you are doing it (or what you have to do to do it); what the impediments to success are and where they originate; etc. Communicative practices of this type presuppose openness, self-monitoring, and constant reflexivity on the part of participants. (172)

In sum, if they are to amount to anything, intentional acts must begin and end with 'communities of practice,' virtual or otherwise.

## *This is Not a Book*

This is not a book, at least in the sense that a book implies a particular knowledge paradigm with finality, authority, and a singular argument. This is not a book; it is a snapshot, a frozen moment in a rapidly moving conversation.

So, what are these essays? The first thing to say about these essays is that they take place in what Donald Schon has called in another context—the 'swampy lowlands.'

> In the varied topography of professional practice, there is a high, hard ground overlooking a swamp. On the high ground, manageable problems lend themselves to solutions through the use of research-based theory and technique. In the swampy lowlands, problems are messy and confusing and incapable of technical solution. The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or to society at large, however great their technical interest may be, while in the swamp lie the problems of greatest human concern. The practitioner is confronted with a choice. Shall he remain on the high ground where he can solve relatively unimportant problems according to his standards of rigor, or shall he descend to the swamp of important problems where he

> cannot be rigorous in any way he knows how to describe? (28)[2]

Whether or not we agree with Schon's judgement that the issues of the high ground are 'relatively unimportant to individuals or to society at large,' or that it is impossible to be 'rigorous' in the swampy lowlands, his identification of the two terrains—and their relative valuation—is suggestive and useful. The case studies in this volume are explorations of what happens when certain kinds of intentions are put into play in particular contexts in the swampy lowlands, where if we can know something for sure we know it with less theoretical and rhetorical certainty than can be indulged on higher ground—whether that high ground is 'high theory' in the academy or institutional or governmental technology and education policy.

To put this another way, what fills this volume, and what has driven this project, is what Lee Shulman calls "pedagogical content knowledge": the knowledge that teachers possess about what it means to make ways of knowing and understanding in a field visible and transferable to students. 'Pedagogical content knowledge' is the *functional intersection* in local contexts of theory, disciplinary knowledge and method, pedagogy, and practical experience. And it is this intersection, precisely, that we hope is represented by the essays in this volume (and indeed in the Crossroads and New Media Projects from which these essays emerge).

Thus, what is here in this volume then is not theory, not prescriptive essays for successful practice, not proof that new technologies do or don't work. One *will* here find *pedagogical content knowledge*, based on the deliberate, modest process of experimentation, slowed to half speed, where faculty attempt to make visible their struggle with the question, 'how do we turn our knowledge—our ways of knowing—into student learning?' That is a terribly complex question that bears asking in new ways by new communities, and one that requires an ongoing, distributed array of examinations, focused on many different 'ways of knowing,' in all the details and vicissitudes of different environments in which the connection between teaching and learning takes place.

Our initial intentions—the intentions of experience—are the first phase of a more reflective and systematic approach to the examination of one's course design, the process of teaching, and the nature of the knowledge of teaching produced by teaching. In this sense, we hope that this volume also contributes to a larger conversation about the 'scholarship of teaching and learning.' In order to take teaching seriously, or even to think it possible to produce a scholarship of teaching

and learning, there first needs to be a fundamental shift in how one defines teaching as an activity and thus as an object of investigation. As Shulman puts it, 'Too often teaching is identified only as the active interactions between teacher and students in a classroom setting (or even a tutorial session). I would argue that teaching, like other forms of scholarship, is an extended process that unfolds over time' (5). Shulman describes that process as embodied by at least five elements: *vision*, *design*, *interactions*, *outcomes*, and *analysis*. With these elements, the extended act of teaching becomes like the extended act of traditional scholarship or research.

It includes a broad vision of disciplinary questions and methods; it includes the capacity to plan and design activities that implement the vision; it includes the interactions that require particular skills and result in both expected and unexpected results; it includes certain outcomes from that complex process, and those outcomes necessitate some kind of analysis. We think this volume represents all five elements and we have divided the volume into three sections, hoping to mirror this pattern of reflective teaching:

> **Section I: Intentions** ('vision and design'—the portion of the volume where we lay out the context and framework for the project);
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> **Section II: Consequences** ('interactions and outcomes'–the case studies themselves), and
>
> **Section III: Meaning** ('analysis'–the section where we have gathered some responses to the essays as a way of extending the dialogue outward).

Thus, the project, the case studies, and the volume itself all try to embody the convergent, developmental process of reflective teaching.

Asking such questions with respect to the full complexity of the teaching and learning process requires us to consider technology in what Bonnie Nardi and Vicki O'Day call "information ecologies." Nardi and O'Day suggest that at the root of intentionality about new media is a need for broadening the operative metaphors, in particular, beyond seeing technology as merely a *tool* (something that one merely 'uses' to do something), or a *system* (something larger than ourselves that does something *to* us beyond our control). Nardi and O'Day suggest the metaphor of an *information ecology*, a complete environment of interdependence, productivity, and creativity that includes both social and

technological components: "We define an information ecology to be a system of people, practices, values, and technologies in a particular local environment. In information ecologies, the spotlight is not on technology, but on human activities that are served by technology." What is critical in an information ecology is the focus of attention on "relationships involving tools and people and their practices" (49-50).

Throughout the case studies in this volume it becomes clear that these 'relationships' are really the phenomenon under analysis. In her essay in this volume on teaching a course on oral history, Rina Benmayor explains how the use of technology *in* the classroom helped make coherent a learning context composed of many different parts, noting,

> The classroom then became a workshop space, where teams brainstormed, outlined arguments, identified materials, discussed perspectives, built collaborative interpretations, defined next steps, assigned homework tasks, edited texts, arranged for the next stages of document sharing, revised, and polished drafts. Technology enabled a 'weaving' process, where electronic exchange from home facilitated group process in class and built each successive stage of production. Electronic communication helped build the momentum of the project and significantly streamlined production of various collectively-authored pieces (newspaper feature, oral presentation, and webpage). (184-5)

In a different way, the importance of focusing on the 'relationships' of 'tools and people and their practices' is made very clear in the essay by Sarah Robbins and Ann Pullen in their analysis of feminist pedagogy and technology in a course about 'Nineteenth-Century Women's Work.' Robbins and Pullen's analysis looks particularly at how the success of each different technology in the course (including video conferencing technology, electronic discussion list, and presentation technologies) depended first and foremost on the compatibility of that usage with the premises of their approach. They note, 'Reviewing our experience, we can see that the mix of setbacks and successes we encountered in the course may best be explained by noting that our implementation of specific technological tools was sometimes at odds with our feminist teaching philosophy, at other times consistent with it.' Indeed, they discovered not only the crucial nature of aligning each technology use with their teaching philosophy, but the need to make their rationale (rooted both in the nature of the technology and its embedding in a particular perspective) clear to students. For example, in discussing the less than

successful use of 'presentation tools' (PowerPoint) by students on an assignment to construct an argument through this multimedia presentation tool, Robbins and Pullen observe that the "mixed success rate" they had with presentation technologies "can be explained by noting our failure to make our students fully aware of correlations" between the tools and their purposes. And in this case, their purposes had to do with the 'constructive' rather than merely transmissive nature of the technology-enhanced assignment.

> . . . we can now see that, besides providing models and structuring critique exercises for our students as preparation for doing their own presentation projects, we also needed to make them more fully aware of how the culminating task exemplified not just a reformulated version of the traditional research report assignment, but rather an authentic exercise in the kind of 'distribution and dissemination' of knowledge increasingly possible with new technologies. Making this distinction clear would have reduced any pressure they felt to 'cover' a particular topic fully, create an 'original statement about it, or draw from a wide array of traditional library sources, and instead focused the assignment clearly on creating a technology-enhanced representation of an argument about Women's' work that could be *useful* to members of our community. (132)

In many ways, as Robbins and Pullen and many others, make clear, changing the teaching environment pushes faculty to make *visible* the principles of their teaching philosophy—their intentions—in the first place. Making all our assumptions and structures more visible—and sometimes calling them into question—is one crucial dimension of the impact that the integration of technology might have on education.

This is what we mean by the 'experience of intentions': not merely the experience of using technologies to reconstruct the learning environment, but as Keith Hjortshoj phrases it in another collection, letting "experience destabilize theory and return us to that condition of creative bewilderment from which new understandings emerge." Hjortshoj suggests,

> When I start to believe that I have everything figured out, I'm sure to be at least partly wrong. In practice I can maintain the integrity of my theories only by becoming increasingly oblivious to the people and circumstances to which they are supposed to apply..We begin to imagine that if we

> assemble the right theoretical apparatus and approach the classroom from just the right angle, theory will govern practice. We will know in advance what will happen when we get there, who our students are, what they need, and how they should change. Then, we begin to talk about using this theoretical equipment for the purpose of 'hammering,' 'chiseling,' or 'chipping' away at some kind of hard, homogenous substance, as though our primary goal were to convert our students into effects of our causes. In this dreamy collective dislocation from our lives and jobs, we begin to imagine that when we enter the classroom on the first day of the next term, we will really know what we are doing. (41)

If nothing else then, the experimental use of new technologies—and the pedagogies they call for—help 'defamiliarize' the teaching and learning process. In that sense, we hope that these essays make a contribution to keeping the whole transformation process both difficult (i.e. without easy answers) and strange. Gail Hawisher (et al.) make a similar point when speaking of the interesting stories of early practitioners in the computers and writing field, and how that group of early adopters often shaped their pedagogical and research practice around the idea that computers continued to appear strange to them. "But," the authors caution, "as computers become increasingly ubiquitous, invisible to our eyes, naturalized within educational contexts, such stories may never again be quite so rich or complex. Individuals telling stories in the coming years may be so immersed in electronic technologies that they no longer see what is new and strange about these machines. This situation may represent a loss of perspective that is hard to recapture" (285). Ultimately our hope in this volume is that seeing 'what is new and strange' will help us see ourselves more clearly, more reflectively, and with nuance. And it might argue for the value of each field—while not hopelessly reinventing wheels—asking basic questions, from the beginning, from the deepest inside of the discipline.

Indeed, this is not a book, it is a 'computer'—at least in the sense that James Farrell, in his response in Section III of this volume, uses the term. Farrell reminds us that 'computer' comes from its Latin roots as 'thinking together.' In this sense we hope that these essays are a 'thinking together,' rooted in fundamental questions and generative of dialogue.

How one receives these essays and the approaches implied in them depends very much on the ways that one is willing to approach the future. In *The Future and its Enemies,* Virginia Postrel argues that there

are two kinds of people who talk about the future: "stasists" who even if willing to talk enthusiastically about change insist on being able to *control* the nature of change and the shape of the future, and "dynamists" who are willing to accept that change cannot always be controlled, and that in fact 'progress' may come about from what may seem like chaotic transformation and movements: "Stasists seek specifics to govern each new situation and keep things under control. Dynamists want to limit universal rule-making to broadly applicable and rarely changed principles, within which people can create and test countless combinations" (xvi). What is argued in this volume is not radical in its explicit form, but the implications are. What may be most dynamic here is the heterogeneity of the 'swamp ecologies' and the specter of the future to be found there. Ultimately, it may be the centrifugal nature of the possibilities that is the most compelling. Helping us turn *toward* these possibilities rather than away from them is what this volume and these projects are about.

Or, at least those were our intentions.

## Resisting the Myths of the Electronic Frontier: Contexts for Intentional Change

*Bear in mind that the truth of a phenomenon is always limited by the speed with which it emerges.*
Paul Virilio

### *The Garden in the Machine*

As Leo Marx pointed out a long time ago, the 'rhetoric of the technological sublime' is an American staple, and 'sublime' rhetoric is in no short supply in the so-called computer revolution. The 'technological sublime' emerged first in response to the inventions of the industrial era that symbolized energy and extension: the steam engine, the telegraph, the printing press, the railroad, electricity. Whatever the particular contexts or apparatus, the 'rhetoric of the technological sublime' argued that technology would allow the United States and humanity to escape history, to rise above its corruptions of poverty, ignorance, scarcity, and injustice. Not only would technology enact a new Eden, but it would enable nature and technology to coexist in "a middle landscape, an America suspended between art and nature, between the rural landscape and the industrial city, where technological power and democratic localism could constitute an ideal way of life" (2).[3]

In the 1980s and early 1990s, techno-enthusiasts ('homesteaders' on the electronic frontier) depicted the new virtual environment of cyberspace as just such a middle landscape, claiming to recover through technology a communal intimacy and interconnection lost in the industrial age. The rhetoric of the new technological sublime argued on several fronts: that the extensibility of worldwide connectivity will eradicate physical and political boundaries; that both the leveling nature of online interaction as well as the universalization of information access will foster democratization; that the decentered nature of hypertext will further erode the existence of limiting hierarchies; and that the engaging power and linking capabilities of multimedia will revolutionize learning and eradicate the need for teachers and schools altogether.

These early sublime responses laid the groundwork for much of the imagery defining the commodification and commercialization of new technologies, saturating our social consciousness with neo-individualist, utopian visions of stylized corporate 'revolutions,' instant gratification for information, and personal escape and expression. Two commercial images of technology can help make the point.

In 1995, Packard Bell was running an elaborate television commercial; it began as an elaborately shot, cinematic cityscape reminiscent of Fritz Lang's *Metropolis* or a post-industrial urban version of *Mad Max* and *Road Warrior*. The commercials opening is shot in black and white, with images of a desiccated urban environment: denizens dressed in rags pull automobiles that no longer run; people wander streets devoid of color and life. The camera moves up the steps of what is clearly supposed to be the New York Public Library. Inside, somnambulant patrons turn the pages of dusty editions of *Paradise Lost*; brightly colored red uniformed soldiers march around the reading room 'sshh-ing' patrons; the camera cuts to a long line of bank customers being served by tellers whose skin is decaying in front of our eyes while cobwebs grow around people's feet. All at once, the camera pulls back and zooms up and out of the crumbling wasteland of a city, pans toward the horizon and moves in full color to a Victorian home in the middle of verdant meadow. Panning through the window of the house, the camera comes to rest at a desktop computer. The voice-over tells us: "Now you can do it all from home. With the Intel Pentium Processo: Packard Bell. Wouldn't you really rather be at home?"

That question, 'wouldn't you really rather be at home' is a haunting mantra for those who suspect technology as alienating and segregating, both at the level of the individual and for society at large. It is echoed in a different way in the long running Microsoft slogan, "Where do you want to go today?" "Wouldn't you really rather be at home?"

The slogans come from what we might call the 'rhetoric of elsewhere' that has long pervaded the technological sublime as well as the mythification of the American frontier. Such language has long carried with it the implication that where we are isn't where we want to be; that where we're going is somewhere else; and that the 'somewhere else' toward which we're heading is empty and unclaimed.

In his book called *Deeper: My Two Year Odyssey in Cyberspace*, *New Yorker* staff writer John Seabrook describes his early experience on the Internet in terms of two iconic American male figures: Henry David Thoreau and Francis Parkman. He describes his design process for his first homepage on which he places portraits of Thoreau and Parkman because, he believes, the Internet embodies these two fundamental tendencies: one, emblematized by Henry David Thoreau looking east, toward isolation and introspection; the other emblematized by Francis Parkman, famous nineteenth-century historian and author of *The Oregon Trail,* looking west, to open territory. For Seabrook, this combination of exquisite isolation on the one hand, and adventures in uncharted territory (in which one has spare and chance encounters with strangers on the trail), on the other, signify early cyberspace.

As American figures who in many other contexts have symbolized the mystification of a particular perspective to the level of universalization, Thoreau and Parkman work (ironically) very well as poster children for the dangerously narrow rhetoric of elsewhere in the cyber-age: Thoreau at Walden, asking "Wouldn't you really rather be at home?"; Parkman, on his masculinist romp in the 'open' West in the 1840s, asking "Where do you want to go today?"

Commercial images—and the myriad other media images with which we're bombarded now—have a significant shaping influence on how innovation, re-technologization, and re-capitalization plays out in schools and universities. They represent both the highest hopes and worst tendencies of the American technological sublime. Such images also have a twisting and inhibiting effect on educators struggling to deal with the impact and potential of new technologies. They have bestowed on educational reform efforts with technology a continuum of images that range from the benign default to isolation and independence as paradigms for innovation, to the exaggerated claims of liberation as the consequence of connectivity. This imagery of elsewhere, isolation, individualism, adventurism, idealized self-expression, and what Stuart Moulthrop calls the language of 'perfect information,' impress onto American education a counter-productive search for silver-bullet applications, scalable 'enterprise' solutions, and prepackaged templates and programs making claims to educational innovation. In many ways

this is all the inevitable outcome of the synthesis of the utopian and sublime early days of the 'electronic frontier' with the forces of broad-band commodity capitalism.

And of course, the tradition of the technological sublime has not been without its counterpart strain. Resistance to technology, while less dominant in the culture of the United States, has long been present, whether expressed in the escapist solitude of Walden, or communitarian and (later) populist responses to technology as deleterious to humanity and community. From *Brave New World* to Vonnegut's *Player Piano* to the apocalyptic discourse surrounding Y2K, suspicion, even paranoia, about technology and its effects on individual freedom and social progress have played a significant role in American cultural representations.

In recent years, both sides of this tension have intensified, as, after years of predictions of a coming technology revolution, the pace of change has significantly quickened. In the context of that acceleration, the growth of technology in education has been nothing short of phenomenal. Rapid advances in digital information processing—manifested in the development of more powerful computers, more sophisticated software, and perhaps most of all, in the explosive growth of networking systems and the World Wide Web—show no sign of slowing. And though patterns of significant inequality persist, access to educational technology is rapidly spreading, affecting a wide range of educational settings. "Information technology has become an increasingly important component of the instructional and learning experience, across all fields and all types of institutions," writes Kenneth C. Green of the Center for Educational Studies at Claremont College and the author of several widely-respected studies. "Students of all ages and across all fields come to campus expecting to learn about and also to learn with technology." The investment in technology has been massive and widespread. U.S. schools and colleges annually invest more than $10 billion in hardware, software, and wiring. President Clinton, an articulate advocate for expanding the use of educational technology, has proposed spending as much as $100 billion over the next five years to ensure that all students have access to digital tools and resources.

Growing investment has led to greatly increased access and use. At the secondary level, recent reports from the National Center for Education Statistics shows that 89 percent of the nation's high schools now have Internet access, up from 49 percent only four years ago. Perhaps even more importantly, 27 percent of high school classrooms are now wired, up from less than 10 percent four years ago. Ten years ago, according to *Forbes* magazine, there was one computer for every

37 high school students; now there is one computer for every 7 students. In higher education the spread of computer use has been, if anything, even more rapid. According to the most recent National Survey of Informational Technology in Higher Education, 33.1 percent of college classes now use Web resources, up from 15.3 percent in 1996. And 44.4 percent of college classes involve the use of email, up from 8 percent in 1994.

The spread of technological capacity has led many educators and observers to foresee dramatic changes in the future of education. "More than any single measure," proclaimed a 1996 California task force on education, "computers and networked technology, properly implemented, offer the greatest potential to right what's wrong with our public schools." In the last few years, the focus of techno-enthusiasm has shifted to the potential of new technology to create classrooms without walls. This trend has been particularly pronounced at the higher education level, as new colleges built around 'distance learning' have proclaimed themselves the model for all education in the 21st century.

The most visible efforts in this field have been the 'virtual universities,' such as the Western Governors University and the University of Phoenix. Created by the governors of 15 states, the Western Governors University is a private, non-profit corporation that intends to provide 'educational services' at a distance, using email tools and web resources plus limited video teleconferencing. The WGU, announced Utah Governor Mike Leavitt, will create "a global free market for educational services, delivered to any location at any time. Information and the opportunity to gain knowledge are beginning to flow to where the people are—at home, at work, or on the road." The WGU and Phoenix both downplay liberal arts education in favor of training students for the workplace. While enrollment has been slow (as of September 1998, only 10 students had enrolled in the WGU, far short of their target of 1000), the governors have been successful in attracting wide publicity and millions of dollars in corporate and foundation funding. "Technology"' proclaimed Colorado governor Roy Romer, in announcing a $250,000 grant from the AT&T Foundation, "is absolutely revolutionizing education."[4]

The interest in distance learning goes far beyond the Western Governors University. Educational administrators everywhere are quick to point out what their university, college, or school is doing to take advantage of technology . The cycle of competition leads to escalating claims and bold predictions, fed by sensationalistic media coverage. "Thirty years from now the big university campuses will be relics," proclaims one pundit quoted in *Forbes* magazine. "It took more than 200

years for the printed book to create the modern school. It won't take nearly that long for the next big change." Naturally, there are positive arguable gains for the use of distance and distributed technologies to reach educational populations that were not being reached before, and to make other kinds of educational delivery more flexible. (And indeed several of the case studies in this volume make primary or entire use of distance learning technologies.) Yet, there is also in the upsurge of distance education often an implicit bias against the 'messiness' of social interaction and the struggle to achieve knowledge constructively. One of the insidious underlying implications seems to be, if you *must* have an education to get a job, then "Wouldn't you really rather be at home?"

In this discourse, technology is often seen as a spur for increased 'productivity' and ability to compete in 'the education market.' Faculty and educational administrators feel pressure to show they are responding to this new situation. Again, media images betray the story. One advertisement on the Web captures the mixture of opportunity and anxiety often occasioned by the new technology: Three little red school houses stand together in a field. A pulsing green line or wire lights up one of the schools with a pulse of energy and excitement, casting the others into shadow. "Intraschool is Coming to a District Near You," a sign flashes. "Don't Be Left Behind!"

Not surprisingly, the rapid growth of technology and the hyped-up claims of politicians, journalists and technology enthusiasts have generated a vocal opposition to the educational use of new technology. David F. Noble, in a widely-read 1997 article, "Digital Diploma Mills," attacked educational technology as "a disarming disguise" for "the commercialization of higher education"' Adapting the argument he made in *America By Design* (his scholarship on the late nineteenth-century development of industrial technology, skilled work, and the engineering profession), Noble argues that new digital technology will provide university administrators with "much greater direct control over faculty performance and course content," providing the tools for a significant increase in "administrative scrutiny, supervision, regimentation, discipline, and even censorship"' The creation of Web-based courses, Noble suggests, also "allows the administration, which now claims ownership of this commodity, to peddle the course elsewhere without the original designer's involvement or even knowledge, much less financial interest." The forces behind this development, Noble finds, include not only university administrators seeking to reduce faculty autonomy and labor costs, but also technology corporations such as IBM, Disney, and Microsoft; foundations such as Sloan, Mellon, and

Pew; and 'the ubiquitous technozealots, who simply view computers as the panacea for everything, because they like to play with them.'

Other commentators have taken slightly different tacks in criticizing the educational use of new digital media. Christopher Ott, in *Salon Magazine*, contends that digital technology encourages rote learning, and thereby "fits into and actually accelerates an existing trend toward the debasement of education." In a June 1998 essay in *Education Week*, Thomas Sherman reviews the history of classroom use of television and labels the Web "another danger for 21st century children" (...). Deriding in her *Forbes* column what she titled "the great technology mania," Diane Ravitch lists among her concerns the expense of the hardware, the existence of pornography on the Web, and her criticism of the notion that technology makes classrooms "fun for students and will therefore help them learn." She approvingly quotes astrophysicist Clifford Stoll as saying, "Most learning isn't fun. Learning takes work. Discipline. Responsibility." Sven Birkerts may have hit the high notes in this chorus when he lamented new media as a dire threat to "depth, meaning, and the narrative structuring of subjectivity," to the essential habits of wisdom, "the struggle for which has for millennia been central to the very idea of culture."

Todd Oppenheimer's 1997 *Atlantic Monthly* article, "The Computer Delusion," expressed a wide range of concerns about the use of technology in education, including its high cost and the paucity of conclusive data showing that students learn more in courses that use computers than they do in courses that do not. His biggest concern, however, was that computers would depersonalize education. "Computers," he wrote, "suffer frequent breakdowns; when they do work, their seductive images often distract students from the lessons at hand—which many teachers say makes it difficult to build meaningful rapport with their students." His conclusion paints this concern in large societal terms:

> This [the use of computers in education] is not just about the future versus the past, uncertainty versus nostalgia; it is about encouraging a fundamental shift in personal priorities—a minimizing of the real, physical world in favor of an unreal 'virtual' world. It is about teaching youngsters that exploring what's on a two-dimensional screen is more important than playing with real objects or sitting down to an attentive conversation with a friend, a parent, or a teacher. By extension, it means downplaying the importance of conversation, of careful listening, and of expressing oneself in person with acuity and individuality.

Unfortunately, many participants from both sides of the debate over technology fall prey to apocalyptic thinking. For many observers, technology signifies a revolutionary force that sweeps all before it, overthrowing the old and ushering in the new. The two sides in the debate place contrasting valences on technology's impact, yet both accept it as a force beyond human control. For both groups, the only apparent choice is to totally embrace technology or absolutely reject it. But this is not the only choice we face; and defining our options in these terms is itself reductive and misleading.

What has been largely missing in this public debate is a more nuanced and careful approach. The debate thus far has been conducted largely on the level of abstraction and sweeping generalization often because it operates on the level of myth rather than concrete realities. Current debate is as much an outgrowth of these historic patterns of nostalgia, idealism, and hyperbole, as on what's possible or happening in the classroom. Most commentators lump all forms of educational technology together into one large, undifferentiated mass. In praising or condemning 'technology,' Noble, Romer and others make little or no meaningful distinction between such different types of digital media as email discussion lists, multimedia presentations (such as PowerPoint), and research in electronic archives. Little distinction is made between media used to supplement face-to-face teaching and learning, on one hand, and on the other, media used to replace such interaction, a more purely 'distance learning' approach. There is little attention to issues of grade level or discipline. In short, there is little in the current debate that suggests thoughtful consideration of educational realities and classroom experiences.

The discussion of educational technology has thus far been dominated by policy-makers, press release writers, and commentators with little or no experience utilizing technology in real classrooms, with real students. Or, the parameters of the debate gets entangled with debates about standards of knowledge that operate in reductive terms over content and student skills, and too seldom through informed discussion of real understanding and higher-order thinking abilities. To move the conversation to a more productive plane, we believe, knowledgeable faculty must carefully examine the available resources and engage in sustained exploration of the kinds of learning that are—and are not—supported by digital tools. Moreover, to be meaningful, the discussion must go beyond the faculty innovators, the 'early adopters,' to including mainstream faculty, discussing their experiences, perspectives, and needs. What are the strengths and weaknesses of a particular CD-ROM or Web site? What happens when we involve students in research using

online collections of the Library of Congress or the National Archives? Can online systems help students build their ability to read for understanding and write with cogency and power? What kinds of learning does digital media support? How can it be used to encourage connected and critical thinking, and the search for depth and meaning? When significant numbers of educators thoughtfully explore such questions, the dichotomies of either/or will fade and a more insightful discussion of education's future will emerge. The faculty development workshop and programs offered through the New Media Classroom Project and the Crossroads Project have sought for the past five years to contribute to and encourage this kind of discussion.

Such a conversation cannot and should not overlook the potentially negative impacts of technology on education and, by extension, on society. Some criticisms of technology deserve sustained attention. We are acutely aware of the issues related to the high cost of new educational technology. Computers are expensive, delicate machines that break down often and require recurrent maintenance. The rapid development of the field means that computer labs quickly become outdated. Wiring classrooms for Internet access is expensive and sometimes difficult, particularly in older school buildings. Software can also be costly, and the constant updates required to stay in step with new resources highlights the need for instructional technology staff. Providing effective staff development for teachers throughout the educational system would add significantly to the cost of purchasing hardware. The combined expense of installing, maintaining, and supporting the effective use of operative computer labs can be overwhelming. And, as Diane Ravitch rightly points out, "the billions spent on technology represent money NOT spent on music, art, libraries, maintenance and other essential functions."

Such costs weigh unevenly on different schools, school systems, and communities. Under-resourced schools and colleges have a particularly difficult time finding the funds to pay the price required for new technology. While federal, state, and corporate grant programs are helpful, they are not sufficient; and they usually pay only for hardware, not for maintenance or staff development. As a result, the schools and colleges serving poor and working-class communities lag behind in the effective implementation of technology. And their students—disproportionately African-American or Latino—are the ones that suffer most from this process. According to the most recent report from the National Center for Education Statistics, 43 percent of K-12 classrooms nationwide have Internet access. But for schools with large numbers of poor students, the number drops to less than 14 percent. For schools with half or more

'minority' enrollment, the figure is an almost identical 13 percent. This disparity shapes colleges and universities as well. While 80.1 percent of all students entering elite private colleges report they use computers regularly, only 41.1 percent of students entering historically black colleges report similar usage.

In many colleges, students who come from under-resourced school systems will find technology to be one more item to be added to an already-daunting list of educational and social challenges. There is a real—and in many ways a growing—danger that new technology will add to the already dangerous nationwide stratification of educational opportunity. Indeed, the most recent national report on the Digital Divide indicates that technology use continues to split along lines of both class and race.[5] And the danger is even worse when considered internationally, as the latest United Nations report on the state of the world economy asserted that globalization was increasing, not decreasing, the gap between the world's wealthy and poor.

Not all the challenges are inherent to the technology itself, of course. The impact of educational technology will be determined in many ways by its intersection with the issues and contradictions of our society. The nature of our educational systems, with their complicated infrastructure of bureaucracy and politics, can also shape the ways new technology will be used, and its ultimate affect. Pressed by legislators, task forces, and boards of trustees, many education administrators, particularly in higher education, are rushing to show that their schools are fully-wired and 'ahead of the curve' on technology. Their need to demonstrate fast progress leads them to pressure faculty to 'put your courses online,' without any consideration of what should go online and what should not. The growing pressure to reduce costs in higher education adds to the sense of urgency. Ironically, the classic American search for an 'instant fix' may impede real progress towards meaningful and effective use of technology. It ignores the fact that figuring out the proper uses of educational technology inevitably takes time: time to learn about hardware and software; time to examine and assess available learning resources in one's discipline; and time to develop and refine effective strategies for media-based activities, units, and courses. Eager for a painless solution, administrators have been all too reluctant to provide faculty with the time and the support they need to make these changes—especially staff development support and released-time from teaching responsibilities. An overwhelmed and beleaguered faculty, feeling exploited and unsupported, may well become exhausted, cynical, or openly resistant to the use of new media. Part of the source of this trouble may be that faculty and administrators are often not speak-

ing of the same phenomenon when speaking about technology. As Gregory Jay argues in his response essay in this volume:

> administrators need to learn much more about the difference between the use of technology for 'delivering instruction' and the use of technology for education. This may, unfortunately, lessen some administrators' enthusiasm for high-tech teaching, especially when they find out what excellence really involves and costs. On the other hand, I want to argue that many faculty will embrace high-tech teaching when they find out that it does not mean what administrators say it means, and that it can in fact serve rather than enslave their pedagogical energies. (396)

Here is where a nuanced attention to outcomes that emphasizes student *understanding* and higher order learning is critical for moving forward. Otherwise, if we as a field are not careful, a dysfunctional dynamic between headstrong administrators and resentful faculty could easily undermine the real educational potential of digital media.

## *Framework: New Media Learning Environments in Culture and History*

While acknowledging the problems attendant to and in some ways occasioned by the new technology, we nevertheless find that electronic environments offer a range of intriguing opportunities for meaningful learning for students in history and culture classes in secondary and post-secondary settings. In our experience, most educational uses of digital technology fall into three key categories:

> **Inquiry-based learning** utilizing primary sources available on CD-ROMS and the World Wide Web, and including the exploration of multimedia environments with potentially fluid combinations of text, image, sound, and moving images in presentational and inquiry activities, involving different senses and forms of expression and addressing different learning styles;
>
> **Bridging reading and writing through online interaction**, extending the time and space for dialogic and distributive learning, and joining literacy with disciplinary and interdisciplinary inquiry;

> **Making student work public in new media formats**, encouraging constructivist pedagogies through the creation and exchange of knowledge-representations, and creating opportunities for review by broader professional and public audiences.

Each type of activity takes advantage of particular qualities of the new media itself. And each type of activity is also linked to particular pedagogical strategies and goals. Most if not all of the experiments reported on in this volume fall into one or more of these categories. Some address at one and the same time several different kinds of opportunities—e.g., asking students to participate in an online discussion, based on their examination of electronic archives—pointing toward some of the possibilities for making manifest the convergence of distributive tendencies we discussed earlier. Before proceeding to the case studies (in the final section of this introduction), we want to discuss these possibilities, establishing an overarching *framework* for considering the types of activities reported on by our faculty. In the final section of the introduction we identify some patterns of use and impact toward which these types of activities lead.

Our framework for categorizing and discussing these activities is one that has developed over time, shaped in fundamental ways by our faculty colleagues and contributors. Through the Crossroads Project and the New Media Classroom program, we have had the privilege of following, observing, and learning from the classroom work of hundreds of history and culture faculty. Our insights into the potential educational usages of new media, and our structure for organizing the discussion into these categories, grows directly from their work.

The framework and our observations about it have also been influenced by other comparable formulations regarding educational technology, especially the early framework known as "EUIT" ("Educational Uses of Information Technology") by Robert Kozma and others, the "Seven Principles of Good Practice for Undergraduate Education," by Arthur Chickering and Zelda Gamson, and its reworking by Chickering and Ehrmann to accommodate new media technologies, the classifications of writing and literacy software by Gail Hawisher and Fred Kemp, and the work of the Epiphany Project for teachers of writing by Trent Batson and Judith Williamson. (See also, the evolution of questions and the two 'Working Syntheses' for the Crossroads research project, reprinted here as Appendix A.)[6] Building on and adapting these earlier

formulations we have tried to make them useful for teachers of culture and history in secondary and postsecondary educational contexts.

In turn, we have shared these observations and this framework with our colleagues in this process, through discussion and presentation, through workshops and institutes, and in written form—in proposals, reports and, most notably, in the Crossroads handbook, *Engines of Inquiry: A Practical Guide for Using Technology in Teaching American Culture*, authored and compiled by Randy Bass, Mark Sample, and others. This discussion draws upon, synthesizes, and reformulates elements of those earlier presentations.

## Inquiry Activities: The Novice in the Archive

The first important area for the use of electronic tools and resources in history and culture courses emerges from the proliferation of digital archives of primary documents. Faculty nationwide, at both the secondary and post-secondary levels, have begun exploring ways to build inquiry activities that take effective educational advantage of the resources available on the Web and on CD-ROM.

If there is anything that binds together the diverse fields and sub-fields of American Studies, it is attention to primary cultural and historical materials. From the point-of-view of history and culture faculty, the rapid growth of digital archives is among the most valuable trends in the development of the World Wide Web over the past seven years. Primary documents or primary sources—letters, diaries, period newspapers, court records, photographs, military records, oral history interviews, and so on—are vital to the study of history and culture. In the early 1990s, there were relatively few Web sites providing access to primary documents. Now, however, as the decade (and the century) comes to a close, there are literally thousands upon thousands of such Web sites, offering digital recreations of an incredible array of documents.

Probably the most outstanding single site for primary documents in American history and culture (at least in terms of sheer volume) is the American Memory Collection, created and maintained by the Library of Congress. With funding from a wide range of corporations and foundations, since 1990 the librarians have been hard at work digitizing the Library's vast collections of documentary materials. As of this writing, American Memory provides online access to 44 different collections and a total of over 1 million different primary documents. Not surprisingly, given the nature of the Library's collections, the online archive is tremendously diverse, ranging from the papers of George Washington

to the African-American Pamphlet collection; from baseball cards of the 1890s to the manuscripts of the Federal Writers' Project of the 1930s; from "The Spanish American War in Motion Pictures" to "Votes for Women: Selections from the Papers of the National American Women's Suffrage Association;" from "Hispano Music and Culture from the Northern Rio Grande" to Civil War photographs of Matthew Brady, to the Walt Whitman papers. Well-managed and carefully organized, the wealth of currently available documents in American Memory defies simple categorization or brief description—and the digitization process is still underway. Month-by-month, additional documents and collections continue to appear.

No other single Web site matches the American Memory Collection, but there are many other digital archives that are impressive and valuable on their own terms. Across the country and around the world, universities, historical libraries, art museums and individual researchers are actively mounting their archives. The Valley of the Shadow, created by Ed Ayres and what is now called the Virginia Center for Digital History at the University of Virginia, offers thousands of documents tracing the history of two counties in the Shenandoah Valley (Staunton, Virginia and Augusta, Pennsylvania) in the three pivotal decades surrounding the Civil War. The San Francisco Museum of Modern Art put together "Crossing the Frontier: Documentary Photographs of the American West, 1849 to the Present," a collection of fifty striking photographs, with contextual information and commentary by historians, curators, and photographers. The African Studies Center of the University of California, Los Angeles, has mounted online the entire collection of the Marcus Garvey Papers, including newspaper articles, correspondence, photographs and audio recordings of several of Garvey's speeches. "Anti-Imperialism in the United States, 1898-1935," created and maintained by Syracuse University graduate student Jim Zwick, offers speeches, leaflets newspaper articles, letters, poetry, and stereograph photos related to the Philippine-American War, the activities of the Anti-Imperialist League, and the broader debates over U.S. foreign policy in the pivotal years of the early twentieth century. The list could go on and on; together, Crossroads and the New Media Classroom have catalogued hundreds of digital archives related to American history and culture web sites, and we know that we are by no means keeping up with the ongoing process of proliferation.

While the Web offers the student of history and culture the widest array of primary documents, it is also important to mention the role of CD-ROMs in this area. The American Social History Project's 1994 disc, *Who Built America? From the Centennial to the Great War,* broke

important ground in demonstrating the possibilities for creating CD-ROMs that combined scholarly depth with technological innovation and presentational craft. The heart of *Who Built America?* lay in the hundreds of primary documents it presented as 'excursions' from the main narrative. The market for CD-ROMs softened in the mid-1990s, as the potential presented by the Web took center stage. But a steady stream of CD-ROMs has appeared, many of them accompanying history texts or literary anthologies, and most of them featuring primary documents as an important attraction and educational resource.

The abundant digital archives available through the Web and on CD-ROM offer exciting educational opportunities for the study of history and culture. The examination of primary sources, and the structured inquiry learning process that is often used in such examinations, are widely recognized as essential steps in building student interest in history and culture and helping them understand the ways that scholars engage in research, study, and interpretation. Primary documents help give students a sense of the reality and the complexity of the past; they represent an opportunity to go beyond the predigested, seamless quality of most textbooks to engage with real people and real problems. The fragmentary and contradictory nature of primary sources can be challenging and frustrating, but also intriguing and ultimately rewarding, helping students understand the problematic nature of evidence and the constructed quality of historical and social interpretations. Colleges and universities have long understood the value of involving students in primary research, and secondary schools are increasingly moving in this direction. Virtually all versions of the national standards for social studies and history published in the 1990s have (in this regard, at least) followed the lead of the 1992 National Standards for US History, published by the UCLA Center for History in the Schools, which declared:

> Perhaps no aspect of historical thinking is as exciting to students or as productive of their growth as historical thinkers as 'doing history.' Such inquiries might be generated by encounters with historical documents, eyewitness accounts, letters, diaries, artifacts, photos, a visit to a historical site, a record of oral history or other evidence of the past. Worthy inquiries are especially likely to develop if the documents students encounter are rich with the voices of people caught up in the event and sufficiently diverse to bring alive to students the interests, beliefs, and concerns of people with differing backgrounds and opposing viewpoints on the event.

Inquiry learning processes, which can be undertaken in a wide range of disciplines, draw on students' natural curiosity and develop their skills as learners and thinkers. Framed by thoughtful questions and contextual information, the inquiry process asks students to take on a particularly active role in exploring texts, generating hypotheses and conclusions, and enriching their knowledge and understanding. Inquiry methods are challenging for faculty as well as students, demanding substantial time in research and planning as well as classroom implementation. But the benefits of motivation, skill-building, and in-depth understanding are widely recognized.

The use of primary sources and inquiry methodologies in history and culture courses by no means requires the use of digital tools. Faculty have long been accustomed to using documentary anthologies and source books (often taking advantage of another somewhat less recent technological advance, the Xerox machine). But the growth of digital archives online and in CD-ROM makes a significant difference, in providing increased access to a much larger number of primary documents on a wide range of topics. Sources that up until recently would have been available only to scholars, committed to and capable of traveling and spending days in research libraries, are now available to undergraduates and high school students. Libraries in many community colleges and high schools have a limited number of documentary collections. Now students in those schools have access to the more than one million documents in the American Memory Collection and the far larger number of documents available at other Web sites. As educators, we have only begun to explore the potential implications of increased access to this abundance of primary source material.

Moreover, the significance of digital archives goes beyond the question of increased access. The digitization of documents allows students to examine them with supple electronic tools, conducting searches that facilitate and transform the inquiry process. For example, the American Memory Collection provides search engines that operate within and across collections; if one is researching sharecropping in the thousands of interview transcripts held in the Federal Writers' Project archive, a search can quickly find (and take you to) every mention of sharecropping in every transcript. Other search processes cut across collections, allowing for connection and comparison. Searches on less massive and complicated sites also offer interesting possibilities. For example, a site created by David Phillips and Thomas Thurston on *How The Other Half Lives* provides the entire text and all the photos from Jacob Riis' classic combination of muckraking journalism and social documentary photography. Searches for key words such as 'race' or 'disease' or 'danger-

ous' turn up interesting patterns and unexpected insights into the language and assumptions of the narrative and its author. In other words, the search engines can not only help students to find what they are looking for; it also allows them to examine patterns of word usage and language formation within and across documents. Enabling students to more easily consider who uses certain words and in what situations and in what ways, the supple search tools provided by digital technology can clarify the extent to which primary documents are not merely data (or evidence) but also databases.

These kinds of activities—searching, examining patterns, discovering connections among artifacts—are all germane to the *authentic thinking processes* of historians and scholars of culture. Digital media not only gives flexible access to these resources but makes visible the often invisible archival contexts from which interpretive meaning gets made. "Everyone knows the past was wonderfully complex," notes Ed Ayres of the University of Virginia, "but seeing the complexity of even a small slice of the past held in suspension before us in a digital archive can be discomfiting. In conventional practice, historians obscure choices and compromises as we winnow evidence through finer and finer grids of note-taking, narrative, and analysis, as the abstracted patterns take on a fixity of their own. A digital archive, on the other hand, reminds us every time we look at it of the connections we are not making, of the complications of the past."[7]

The combination of increased access with the development of powerful digital searching tools has the potential to transform the nature and the scale of students' relationship to the material itself. In *Engines of Inquiry*, Randy Bass discussed this transformation and introduced the term, 'the novice in the archives':

> The scale of these new tools allows novice learners to get closer to seeing key texts as ideas situated in a complexity, and to use those tools as prosthetics for searching and sorting through possibilities and contingencies, en route to performing authentic analysis and synthesis. This is the phenomenon that I call the 'novice in the archive.' And there are two important points to bear in mind here: first that new technologies are making it possible for novice learners to engage in the kinds of archival activities that only expert learners used to be able to do; and the nature of their encounter with primary materials and primary processes is still as novice learners. The unique opportunity with electronic, simulated archives is to create open but guided

> experiences for students that would be difficult or impractical to recreate in most library environments. (1-23)

The task of creating these 'open but guided experiences' is a demanding one. Faculty must not only learn how to use the new technology, but also spend time exploring the digital archives in order to learn what they hold and consider what students can learn from them. The construction of effective inquiry activities demands knowledge of the topic, the documents, and the archive, as well as the craft of introducing students to the inquiry process. Implementing inquiry approaches in the classroom takes considerable class time—time that faculty are sometimes reluctant to give. And the inquiry process is by definition not easy to control; students are likely to come up with answers the teacher did not anticipate or agree with. But for growing numbers of faculty, the benefits of inquiry methods outweigh the difficulties, and the attractions of online archives carry significant weight in this equation.

All of the potential benefits—and overhead—of inquiry work with archival materials, are equally as relevant in making use of *multimedia* environments for enhancing students learning. Educational researchers and cognitive psychologists such as Howard Gardner have shown that different students think in very different ways, and learn best with different types of materials and activities. Effective teachers often think about how to address different needs during a unit or a course. New media offers an opportunity to address these needs by providing new combinations of different types of media, linking a broad range of sensory and cognitive processes.

Most of our discussion of new media to this point has focused on the written word, in the form of letters, diaries, and other primary sources. But among the most important aspects of new media is its ability to go beyond text to present still images (both black and white and color), sound, and moving images. Advances in software development and the spread of high-speed, broad-band data lines are making information-rich applications increasingly accessible to the mainstream classroom. The new media offer important possibilities both for enhanced multimedia presentations to a class, and for student exploration of multimedia websites and CD-ROMs.

One of the important watersheds in the development of new media came in the early 1990s, with the creation of Mosaic, which made it possible for the first time to easily transmit images as well as text. Less than ten years later, the Web is a predominantly visual medium, full of images both simplistic and complex, commercial and artistic, contemporary and historical. The Museum of the American Indian offers online

exhibitions of contemporary Native American artists working in oil paint, watercolors, ceramics and textiles. The Brooklyn Expedition website, created in part by the Brooklyn Museum, presents multiple views of objects from its Latin American art collection, allowing viewers to 'pick up' and examine from all angles pre-Columbian artifacts such as Peruvian pottery and Meso-American idols. A website maintained by the Classics department at the University of Michigan lists more than 120 web sites dedicated to presenting images related to classical antiquity, from "Portraits of Roman Emperors" to "Assyria On-Line."

The capacity to digitize and present audio recordings has lagged behind the process of presenting still images, but at this point software applications such as ReelAudio are freely available and relatively easy to install and use. As a result, audio presentations are increasingly common on the Web, as they already were on CD-ROM, allowing students to listen to music, speeches, archival radio news, oral histories, and other sources valuable to the study of history and culture. For example, "The Red Hot Jazz Archive: Jazz Before 1930" website presents background information, essays, images, and above all the music of early jazz pioneers. Students can enjoy and learn from rare recordings of scores of jazz artists, from Louis Armstrong and King Creole to Bix Beiderbecke.

CD-ROMs offer equally exciting and in some cases even faster access to a wide range of images and sound. One of the richest multimedia resources in art history is a disc produced and published by the Smithsonian National Museum of American Art, which presents a significant portion of the museum's permanent collections covering 300 years of American art. The disc allows viewers to examine a wide range of art, organized by artist, by time, and in thematic exhibitions. The disc exemplifies many powerful characteristics of a multimedia, constructivist learning environment. The timelines, browsing and sorting tools afford users multiple points of entry into the materials, which are also extremely *malleable*, as the viewer can zoom in for the close-up study of key details, or highlight selected portions of the image to look for patterns and compositional structures.

The disc also offers some elements of 'modeling' (demonstrating ways of seeing) and 'scaffolding' (supporting structures for guiding students through their own exploration and learning). For example, the program contains a section called "Director's Choice," which contains curatorial audio and image presentations by the Director providing in-depth background and analysis on a selection of paintings. These presentations model sophisticated ways of looking at and understanding a broad array of artistic movements, while images of the paintings change in

front of the viewer, highlighting parts and layers of composition. These presentational features are then supported by a wide range of searching, sorting, and exploratory tools by which students can pursue their own connections. At any point, any thumbnail of a painting can be 'dragged' into a personal portfolio, as students, or groups of students, collect images of interest.

Finally, the disc has a 'writing' feature that allows students to view their selected paintings in a space that works like a virtual 'slide tray,' and then create virtual exhibitions, complete with curatorial notes that they can author. In this way, the National Museum of American Art disc models a robust multimedia program that can be used by both teachers and students, and can facilitate both presentational activities as well as exploratory and constructive learning. The program also bridges 'reading' and 'writing,' in a multimedia context, by providing in a single environment the tools for modeling ways of seeing in combination with tools for creating and constructing presentations of knowledge that can draw on that modeling. As a multimedia learning environment, the NMAA disc represents one kind of constructivist tool that helps students engage more enthusiastically in the thinking processes of expert learners This is something we can value in all authentic archival environments that support constructivist pedagogies.

Samuel Wineburg, in one of his many valuable studies on historical thinking and learning, explains that "The end products of historical cognition are available for examination by studying the expansive monographic literature in history. But what about the intermediate processes of historical cognition? How is it that historians come to know what they know? What cognitive processes do they use to piece together the past when the documents they review are fragmented and inconsistent? What rules of thumb do they use to resolve textual contradictions and how do they get from sketchy document to comprehensive narrative" (85)? In other words, a crucial move in shifting our focus from teaching to learning is a shift in our attention from the 'end products' of expert cognition to the 'intermediate processes.'

The rationale of this shift stands behind many constructivist approaches to teaching, but the connections are not inevitable, in that one can use a variety of student-centered, active pedagogies to help maneuver students toward finished productions that merely imitate expert products. One powerful model for structuring the transfer of these 'intermediate processes' is what Allan Collins, John Seely Brown and Ann Holum call "Cognitive Apprenticeship." "In apprenticeship," they explain, "learners can see the processes of work." Traditionally, 'apprenticeship' applies to 'physical, tangible activity,' but not to school-

ing. "In apprenticeship, the processes of the activity are visible. In schooling, the processes of thinking ar often invisible to both the students and the teacher. Cognitive apprenticeship is a model of instruction that works to make thinking visible" (6).

Collins, Brown, and Holum argue that the apprenticeship model is characterized by four important aspects: *modeling* (the expert shows the apprentice how to do a task), *scaffolding* (the supports provided by the expert to help apprentices carry out the task), *fading* (the process by which the expert pulls away slowly in order to let the apprentice accomplish it her or himself), and *coaching* (the thread running through the entire apprenticeship) (8). Key to applying this model for learning—and especially key here in considering the goal of teaching for student understanding in culture and history—is transferring to students these intermediate cognitive processes, what they call 'strategic knowledge.' Different from important 'domain knowledge' (concepts, facts, and procedures), 'strategic knowledge' refers to "the usually tacit knowledge that underlies an expert's ability to make use of concepts, facts, and procedures as necessary to solve problems and accomplish tasks. This sort of expert problem-solving knowledge involves problem-solving heuristics (or 'rules of thumb') and the strategies that control the problem-solving process. Another type of strategic knowledge, often overlooked, includes the learning strategies that experts use to acquire new concepts" (42). Cognitive apprenticeship is one model for teaching students the strategic knowledge and methods of expert learners, through any version of a process that begins with modeling, and moves through a scaffolded and sequenced process of student rehearsal and reflection, leading to the point where the learner takes on more and more of the expert tasks.

This idea of 'strategic knowledge,' and the cognitive apprenticeship model, are useful ways to begin refining the idea of authentic activities, and the possible roles that new media technologies might play in reshaping teaching and learning. New media technologies can help make these processes visible and accessible to learners, in part by helping students approach problem-solving and knowledge-making as open, revisable processes, and in part by providing tools—and simulated archival environments—that enable teachers—as expert learners—a bridge to student thinking processes.

## Bridging Reading and Writing through Online Interaction

One very significant dimension of 'making thinking visible,' is the bridging of reading and writing through such online writing, and elec-

tronic dialogue and communication tools deployed across the curriculum. The use of such tools brings more than just the opportunity for interaction among students with the flexibility of time and place (although this is valuable); communication technologies also bring new contexts and spaces for reshaping the processes of reading and writing.

In the 1990's, as email became widely available, and the growth of America Online, chat rooms, and other more sophisticated forms of online interaction have become a phenomenon of popular culture, electronic discussion tools have also found increasing acceptance in education, first as a tool of scholarly communication and now as an opportunity to extend the time and space available for student learning. Over the last 15 years, writing instruction, Writing Across the Curriculum (WAC) and Communication Across the Curriculum (CAC) movements have increasingly made use of electronic tools to create the varied practices which Donna Reiss, Dickie Selfe, and Art Young bring together under the term "Electronic Communication Across the Curriculum" (ECAC).

These wide and varied contexts for fostering online writing and conversation have demonstrated that email discussion lists and other tools for electronic interaction have the potential to enrich student learning by facilitating dialogic approaches, providing opportunities for students to engage with each others' ideas and knowledge. "The most basic applications of the Internet involve writing," as Reiss, Selfe, and Young put it, "and every student who uses these tools is participating in an activity that might be characterized as communication in or across the curriculum" (xviii).

In her introductory essay to the collection *Electronic Networks: Crossing Boundaries/ Creating Communities*, Susan Hilligoss divides the range of "writing-based projects that stress active learning" (in a networked writing or English classroom) into two main categories: "those that emphasize *conferencing*, including electronic mail (email) and 'real-time' conferencing; and those that empahsize *publishing*, including digital, desktop, and multimedia authoring" (our emphasis, 3). Among the activities she associates with 'conferencing' include email pen pals, email file-sharing and writer's exchanges, tutoring and mentoring, email listservs or discussion groups, and the increasingly numerous venues for 'real-time' conferencing. Among the activities she groups under *publication* (which we'll address below) include all kinds of digital publishing, such as desktop publishing and electronic portfolios, as well as webpage and website construction, and multimedia authoring (4-7). In any of these tools and approaches, online interaction encourages the distribution of responsibility for making knowledge

among the students of a particular class, shifting from a teacher-centered environment to a more learner-centered one.

Over the last several decades, educators in many disciplines and at every level of education have come to believe that meaningful education involves students not merely as passive recipients of knowledge dispensed by the instructor, but as active contributors to the learning process. This approach, which goes back at least to John Dewey and his colleagues at the beginning of the early twentieth century, has been bolstered in recent years by renewed theoretical elaboration and the generation of significant research data on learning and teaching. One of the key elements in this pedagogy is the importance of student discussion and interaction with the instructor and with each other, which provides opportunities for students to articulate, exchange, and deepen their learning. Diana Laurillard has posited a "conversational framework" for learning, premised on a "cyclical process" that allows "both teacher and student to understand each other's intentions and descriptions of the phenomena at the discursive level and come to some kind of agreement: then at the interactive level, students practice their subject, and get feedback on their actions; then they reflect on this experience to integrate it with the theory, and rearticulate what they know at the discursive level" (*Engines* 10)[8]

Variations of this process are practiced by educators in a wide range of settings. They have been widely embraced by faculty teaching courses in history and culture, who are often particularly concerned with issues of perspective and interpretation, and with students' ability to draw the linkages between academic content and the experiences and issues of their own lives, as well as between academic content and the development of their own expressive abilities.

Electronic mail, electronic discussion lists, and web bulletin boards can support and enhance such pedagogies by creating new spaces for group conversations. In some settings, the electronic interaction complements the learning that takes place inside the classroom; in a more purely 'distance learning' approach, the electronic forum becomes the primary setting for student-to-student (as well as student-to-teacher) interaction. For teachers and courses that fall into the first category, one potential advantage to using electronic interaction is simply that it increases the amount of time that students are focused on and interacting about the subject. Another advantage is the opportunity for 'asynchronous' discussion: students can engage in the conversation on their own schedule, rather than only at the time when the instructor and other students are available. A third advantage is the fact that electronic interaction involves the writing process, which can facilitate complex

thinking and learning as well as building related skills. These advantages can combine with the potential for electronic discussion to draw out students who remain silent in face-to-face discussion.

In addition to providing a complementary space for creating a sense of community for an entire class, other teachers use electronic discussion lists to provide conversational spaces 'smaller' than the class itself. Faculty who teach larger classes have found it effective to divide the class into smaller conversational groups (10-15 students each), or even smaller peer writing groups, where each week different questions are addressed or group research projects are undertaken. As with all kinds of class participation, it is to be expected that some groups will work better than others, some thriving, some muddling along, some silent or stagnant. Nonetheless, teachers who utilize email and electronic discussion tools generally find them to be a positive influence for engaging students in a number of ways.

In this way, digital tools can complement the pedagogical techniques that already serve to distribute responsibility and authority in the classroom. Teachers using collaborative and cooperative styles of learning, in-class discussion groups, and group projects all seek to engage students more actively in the construction of knowledge. Application of these techniques to the use of new digital tools will help to ensure that the use of educational technology does not lead to isolated alienated students, and that contrary to what Oppenheimer and others fear, technology can actually encourage thoughtful conversation, attentive listening, and the expression of oneself 'with acuity and individuality.'

Moreover, these pedagogies and the interactive nature of the technology address specific issues in the teaching of culture and history. "Distributive learning responds to issues of identity, subjectivity, and community that characterize newer and expansive approaches to literary, cultural, and historical studies," suggested *Engines of Inquiry*. "Similarly, distributive learning approaches are also responses to anxieties about 'coverage' in which the exploration of alternative texts perspectives, and methodologies are an increasingly integral component for courses that less and less can presume to be 'covering' a particular topic" (14).

The shift from a coverage model to a model based primarily on student understanding and performance necessarily has to focus thoughtfully on *processes* of cognition and knowledge-making, as both an individual and social act; and it is around the complexities of teaching and learning expert processes that we can also move toward increased integration of reading and writing. Not only can dialogic technologies help link the process of writing to activities of inquiry—and availing those

processes for exchange—but they also offer environments for nuancing the act of *reading* as a process. This is one of the ways that can help put an end to what Peter Elbow calls the "war between reading and writing" that currently privileges reading over writing in the academy. Speaking about the teaching of literature (although his point applies perfectly well for all culture and history fields), Elbow argues:

> students *could* come to see reading as a 'process' of cognitive social construction if only there were a tradition in literature, as there is in writing, of teachers and researchers sharing what we might call 'rough drafts of reading': showing or talking about their actual reading process *from the beginning*—for example, by working with colleagues or students on texts they have not seen before; giving an honest protocol or an accurate account of the mental events that go on in one's mind while engaged in creating meaning from a text. (281)

Applying Elbow's point to new media, we believe it is most productive to think of online *writing* technologies also as online *reading* technologies, and to continue developing the integral role of writing and dialogue in archival and inquiry activities, and vice versa.

## Designing Constructive Public Spaces for Learning

Closely connected to both online writing and inquiry activities is the third dimension of the framework: the use of constructive virtual spaces as environments for students to synthesize their reading and writing through public products. The third dimension of the framework—in some ways the synthesis of the first two areas—entails the use of new media technologies as virtual spaces where students publicly perform their knowledge through constructed projects. As we have already seen, virtual environments offer many layers of public space that help 'make thinking visible' and lead students to develop a stronger sense of public accountability for their ideas. The creation of public, constructed products is another manifestation of these public pedagogies, one that engages students significantly in the *design* of knowledge.

Building on the work of David Perkins, David Jonassen, Jamie Myers, and Ann Mckillop argue that "knowledge acquisition is a process of design, that it is facilitated when learners are actively engaged in designing knowledge rather than interpreting and encoding it. Learners become designers when they focus on the purpose for acquiring infor-

mation, its underlying structure, generating model cases, and using the arguments entailed by the subject matter to justify the design. The people who learn the most from instructional materials are the designers" (94).

Constructing knowledge objects is a powerful dimension of constructivist pedagogies, sometimes also called constructionism. "Constructionism," as defined by Yasmin Kafai and Mitchel Resnick, "suggests that learners are particularly likely to make new ideas when they are actively engaged in making some type of external artifact . . . which they can reflect upon and share with others" (1).

In the use of new media technologies in culture and history fields, there are many ways for students to make their work public in new media spaces to the learning process, ranging from the individual construction of web pages to participation in large, ongoing collaborative resource projects that involve many students and faculty over many years development.

Many have argued that digital environments are ideal to facilitate the realization of constructionist approaches. For example, Jonassen, Myers, and McKillop argue "that producing hypermedia and multimedia products is among the most complete and engaging of the constructivist/constructionist activities" and that learners "benefit most from socially constructing hypermedia/multimedia knowledge bases that reflect their own, and their community's, understandings of content being studied." They and many other also argue that "the process of researching, organizing, and constructing such knowledge bases engages learners in higher-order critical thinking and literacy" (94).[9] It is also clear that such activity is—as with inquiry activity in general—*authentic*. Engagement in constructionist projects in culture and history puts students in contexts where they are in a better position to acquire the 'strategic knowledge' of expert learners as they make the kinds of *design* decisions necessary for building representations of knowledge.

In *Engines of Inquiry* we surveyed a wide range of constructionist projects with which culture and history teachers were experimenting. We provisionally identified five different kinds of student (or student-teacher) constructionist projects:

> **The Electronic Paper**
>
> These are electronic and wired versions of course papers, or topical electronic projects that are the electronic equivalents of traditional papers and projects, often with hyper-

links, multimedia, and the intertextuality of peer dialogue and cross-paper conversation.

**The Collaborative Shared Resource**

These involve the creation of a large, focused resource that is built by many students, as well as faculty and others, where everyone contributes one small component and creates a significant, ongoing, and cumulative resource. Examples include collaborative timelines or annotated bibliographies.

**The Virtual Exhibit**

These 'virtual museum' projects use interactive multimedia to create (individually or collaboratively) a project around a particular topic, combining materials in some arranged or narrative format.

**The Digital Archive**

Electronic archives offer digitization and delivery of archival materials, often local history materials, where students are constructing the archive itself and adding explanatory, contextual, and interpretive materials.

**The Integrative and Reflective Project**

These 'meta-sites' combine some of all of the above, and contain some degree of self-reflexiveness about the new and hybrid nature of new media knowledge.

(See http://www.georgetown.edu/crossroads/constructive.html for links to online examples.)

Of course, the distinctions among these categories are quite fluid, and indeed, the hypertextual nature of virtual spaces makes it possible, for example, to link electronic student papers, produced ephemerally each semester, to a larger ongoing virtual exhibit or digital archive, to which students might also make a more permanent contribution.

The power of the digital environment for these kinds of projects does not come merely from their public nature, but the capabilities of electronic tools for making new representations of knowledge in non-linear ways, and through multiple media and multiple voices. Digital tools have the capability to represent complex connections and relationships, as well as make large amounts of information available and manipulable. There is great potential, which we have only begun to understand,

in using digital tools for constructionist learning approaches that help students acquire and express the complexity of culture and history knowledge.

These possibilities were first explored by the early hypertext theorists and practitioners in English, such as George Landow, Michael Joyce, Carolyn Guyer, and Stuart Moulthrop. Michael Joyce distinguished, for example, between 'exploratory' hypertext, where the user followed the links and associations made in digital environments by other authors, and 'constructive hypertext' that could be used "as a tool for inventing, discovering, viewing and testing multiple, alternative organizational structures as well as a tool for comparing these structures of thought with more traditional ones and transforming one into the other" (43). With the explosion of the World Wide Web and other digital environments, it is now possible to think about 'constructive hypertexts' in even more expansive ways, including databases, writing tools, and information networks—as the work of Johndan Johnson-Eilola and others have shown.[10]

Student constructionist projects offer a potentially very rich synthesis of resources and capabilities; they combine archival and database resources, with the conversational, collaborative, and dialogic tools, in digital contexts characterized by hypertext and other modes for discovering and representing relationships among knowledge objects.

In this way, constructionist approaches, and the projects that grow from them, can synthesize and totalize the authentic, participatory pedagogies fostered by new technologies. The impact is more than cognitive—as constructionist activity connects with the social, affective, and expressive sides of learners. Kafai and Resnick put it this way:

> One of the main tenets of constructionism is that learners actively construct and reconstruct knowledge out of their experiences in the world. It places special emphasis on the knowledge construction that takes place when learners are engaged in building objects. Constructionism differs from other learning theories along several dimensions. Whereas most theories describe knowledge acquisition in purely cognitive terms, constructionism sees an important role for affect. It argues that learners are most likely to become intellectually engaged when they are working on *personally meaningful* activities and projects. In constructionist learning, forming new relationships with knowledge is as important as forming new representations of knowledge. Constructionism also emphasizes diversity: It recognizes

> that learners can make connections with knowledge in many different ways. Constructionist learning environments encourage multiple learning styles and multiple representations of knowledge. (3)

In considering the integrative nature of constructionist goals, we might usefully recall the "seven pedagogical goals" for designing "constructivist learning environments" formulated by Peter Honebein that we cited on page twenty-one, above. All of these goals—engagement in the knowledge construction process, appreciation for multiple perspectives and modes of representation, embedded learning, and so forth—are addressed in some way by the three-pronged framework we have laid out here. But, although there is great potential, there are many obstacles, and no inevitabilities. The potential benefits of technologies laid out in the framework will require the right institutional and professional contexts for full realization. These contexts must respect the intricacies of synthesizing new technologies with the complexities of learning in the culture and history fields. To uncover these intricacies, and build a knowledge base of excellent practice, we need to situate the framework in a dynamic conversation that treats teaching and learning as matters of scholarly inquiry. Thus, before we highlight the patterns of practice we see in the essays in this volume, we want to suggest how this conversation might take shape.

## 'A Vision of the Possible': Digital Tools and Reconstructive Pedagogies

> *Academic knowledge is not like other kinds of everyday knowledge. Teaching is essentially a rhetorical activity, seeking to persuade students to change the way they experience the world. It has to create the environment that will enable students to learn the descriptions of the world devised by others. (28)*
>
> Diana Laurillard

> *The stars incline but they do not compel.*
>
> Old astrological saying

## *From Reflective Practice to the Scholarship of Teaching and Learning*

The framework laid out in the previous section is just the barest beginnings for any vision of how technology-enhanced pedagogies might transform the culture and history fields. The case studies in this volume represent a collective faculty effort to explore the possibilities, opportunities, problems, and questions represented by this framework in the context of real classrooms and real students, and to provide a preliminary report on our findings. While this volume represents important documentation, it will not satisfy those who want 'hard data' that proves the value of technology. This is not a report on student pass rates on standardized tests, conducted with control groups and analyzed with statistical tools. While this kind of research can be valuable, we have found that it often misses the point of what actually is happening in a classroom—and what we want to happen there. And often, when this kind of data is requested (or demanded), it is made with an assumption that the current educational system is working well, and more traditional approaches already have been validated by similar types of research. But in fact higher education knows very little about learning at the collegiate level, and has not assimilated the vocabulary or intellectual tools that might make the rigorous examination of the relationship between teaching and learning widespread.

Our case studies take a different approach, one based in classroom observation and thoughtful reflection. While such a 'teacher as researcher' process builds on obvious logic, it is in fact remarkably rare in both secondary and higher education. Diana Laurillard, speaking of the need for more informed and reflective teaching practices in higher education, argues: "Teachers need to know more than just their subject. They need to know the ways it can come to be understood, the ways it can be misunderstood, what counts as understanding: they need to know how individuals experience the subject. But they are neither required nor enabled to know these things" (4). With Laurillard, we believe in the vital importance of faculty examining and collectively discussing their classroom practice and its impact on student understanding. We believe that this approach—which we'll explore here as the 'scholarship of teaching and learning'—will be essential in deepening our collective professional insight into the capabilities of new educational media laid out in the framework—and into broader questions about how students learn.

The scholarship of teaching and learning can be thought of as a counter-force to the 'rhetoric of elsewhere' that imbues the language of

technology in the marketplace, the language that says innovation is about individual adoption and the imposition or infusion of optimal programs onto empty spaces. At both practical and theoretical levels, a scholarship of teaching and learning brings to the foreground the intellectual, analytic, experimental, and developmental dimensions of educational reform.

If a scholarship of teaching and learning is a critical context for *intentional* change in education, then how do we define it? Does everyone have to do it? What's the relationship between a scholarship of teaching and educational research? And, most germane here, what are the connections between the scholarship of teaching and learning and technology innovation?

The scholarship of teaching and learning does not have a clear and simple definition, and its meaning is still very much evolving. Put mostly simply, the scholarship of teaching and learning may be defined as a *range of activities* engaged by faculty to observe and analyze their own teaching, for the purpose of improving their teaching and sharing their findings with others for the improvement of teaching in their disciplines, on their campuses, and in their professional contexts. Although we tend to think of traditional scholarship as publishable products, we want to stress the 'range of activities' as the critical part of this definition. As Tom Hatch and Kim Austin put it,

> The scholarship of teaching . . . does not have to be defined simply by what properties a product has; scholarship can be seen as encompassing the activities in which individuals and groups engage in order to produce those products. . . . Rather than making the production of a distinct body of the 'scholarship of teaching' an end goal in itself, this view suggests that improvements in the quality of teaching and the status of teachers will come about as teachers at all levels articulate and share what they are doing with others.[11]

In whatever way we ultimately define the scholarship of teaching and learning, it is useful to recall the dual origins of the idea. The phrase, the 'scholarship of teaching,' comes originally from the report released from the Carnegie Foundation for the Advancement of Teaching in 1990, called *Scholarship Reconsidered*. In this report, Ernest Boyer and his staff were really trying to reconsider the narrowness of the reward structure apportioned specifically to traditional research (what they called the 'scholarship of discovery'). They proposed four areas of 'scholarship' that would be more representative of the range of profes-

sional activities undertaken by faculty. In addition to the scholarship of discovery, the report called for the increased recognition of the scholarship of integration, the scholarship of application, and the scholarship of teaching. In this context, the 'scholarship of teaching' referred to the need to recognize the intellectual and scholarly components in teaching. The *Scholarship Reconsidered* report spurred a decade of productive dialogue and discussion. But the 'scholarship of teaching' was the area of the report most skeptically received by the academic community.

Meanwhile, in the early 1990's a second effort on the recognition of teaching throughout higher education was developing, theorized in large part by Lee Shulman, Boyer's successor at the Carnegie Foundation, and by the American Association for Higher Education's 'peer review of teaching' project. This movement went forward under the banner 'making teaching community property' and was motivated less by the concern over work and reward as by the recognition that a "key problem in the efforts to improve teaching has been an impoverished understanding of the knowledge and skills needed to teach" (2). Certainly there had always been a base of knowledge of empirical and scientific inquiry into teaching and learning, but in addition to traditional educational research, Shulman stressed there needed to be the tools for the ongoing investigation of teaching by teachers who were in the position to be the best investigators of their own practice. Although the ultimate values are the same, the difference in emphasis between the 'scholarship of teaching' in the Boyer report (stressing recognition and reward) and the focus on a scholarship of teaching as an *activity* of scholarship is important. As Hatch and Austin put it:

> When used in the Shulman sense, the scholarship of teaching emphasizes that the products and activities that help articulate, review, and exchange the expertise of teachers are as important to our knowledge and understanding of teaching as traditional modes of research and scholarship. (2)

Although the scholarship of teaching should have the qualities of scholarly products it is more important that its range of activities be part of an institutional vision for providing an intellectual context in which faculty engage the professional practice of teaching. Russell Edgerton, as president of the American Association for Higher Education, argued for many years in behalf of 'making teaching community property.' As Edgerton puts it,

> If we could introduce faculty to a conception of teaching that honored faculty's intuitive appreciation for the subtle processes of 'knowledge transformation' entailed in quality teaching, then perhaps teaching *could* become a subject of ongoing professional, collegial discourse. A culture of interest in teaching could develop that would contain its own dynamic for continual improvement. (vi)

Both these streams of the scholarship of teaching are extremely critical to the incipient, ongoing project of integrating new media technologies into higher education, as they help expand the vision of what it might mean to widen the range of "activities that help articulate, review, and exchange the expertise of teachers." Cynthia Selfe argues for the need to "prepare English composition teachers to be classroom researchers who systematically observe technology and its relationship to learning" (33). Her point is that systematic observation is even more important for teaching in the virtual age than before:

> For teachers operating in virtual environments, the need for systematic observation and research may be even more necessary than it is in traditional environments, informed as they are by a long history of educational trial and error, the many leads our profession has already followed, and the accumulated learning we have amassed. Given the embryonic state of our knowledge about what goes on when instruction is carried out in virtual learning spaces, however, increasing instances of observation and research are essential to directing our efforts for the next decade. Without the information we can gather from such observations, we have little to go on in making decisions about virtual instruction. (33)

Selfe's point is borne out in many ways throughout the essays in this book, whose authors often exemplify the attempt to become just the 'lifelong learners' and critical users of technology she calls for, even if they would differ in research methods. Yet, it is clear that for the most part these faculty are struggling to adapt to different kinds of professional demands, working through unfamiliar roles to familiar ends, guided by deeply-held values.

For example, in the case study here by Barbara Ewell, she describes how her experience teaching online revealed different problems than she had seen before:

> My experience with online teaching has yielded, I think, promising lessons. Electronic media are in the end simply tools that we can use to enhance our teaching. The experience and wisdom of the instructor, not only in providing information but in structuring ways to assimilate it, are still entirely necessary . . . For the vast majority of people, learning will always require some kind of structure, some organization of information and some means of testing one's awareness against and within a community of other learners. The new media offer us different ways of shaping that community and of presenting information, but they do not alter our essential roles—although, admittedly, here at the beginning, the differences make us feel as though we are taking up a whole new profession. Instead, I think we are simply having to reassess what is critical to learning and how—when modes of learning change—we will be able to evaluate it. (111-12)

This is where the activities of a scholarship of teaching and learning—with its systematic reflections and investigations—become indispensable to the integration of technology into education.

What might it mean to engage in 'research' and 'observation' systematically? Selfe argues that "given the complicated interaction of technology, teachers, learners, and cultures in our schools, those educators who set about to observe computer-supported classrooms in a systematic way will need to bring to bear some combination of enthnomethodology [sic], case-study techniques, inferential statistics, formal writing assessment, historical analysis, and naturalistic observation to accurately portray what is happening" (35). In addition to more rigorous research methods, such investigations will also be made more systematic by not existing in isolation. Citing earlier suggestions by Gail Hawischer, Selfe suggests for composition and English teachers, that "we must first refine our research approaches, designing single investigations so that they build on the findings of previous work, or better yet, designing series of studies that follow 'systematic research agendas'" (35).

Extending the idea of systematic investigations and a coordinated research agenda for all culture and history fields is an appealing goal, but needs to be tempered by some preliminary questions. We might ask, for example, if all forms of the scholarship of teaching and learning need to use the same methods—or combination of methods? Can there

be a range of methodologies, forms of representation, even genres with different conventions?

The essays and case studies in this volume are for the most part 'documentary'—arising out of journal-like reports and refined into what we might call 'rigorous reflections,' if not systematic research. The rigor of their reflection ranges from attention to student self-reports of learning and satisfaction, to careful analysis of course goals and processes in the context of broader theoretical frameworks. Whatever slant each essay takes, taken together as documentary reflections, they occupy a 'methodological middle ground,' somewhere between 'high science and armchair speculation.'[12]

A recent collection on teaching, called *Narration as Knowledge* (edited by Joseph Trimmer) argues for diverse forms of documenting teaching and learning that takes its formal cues not from field research but from creative writing. The essays in *Narration as Knowledge* are built around the techniques of point-of-view, narrative, dialogue, and dramatic scenarios to capture stories about the relationship between teaching and learning in writing and literature classes. The essays in *Narration as Knowledge* are offered as alternative forms for documenting teaching, and don't preclude the need for more systematic approaches. Nevertheless, the volume's intentions serve as a reminder that there is room for an expansive range of styles for capturing reflective and scholarly teaching practices, and—as Shulman puts it—"making them available for scholarly exchange and use" (Hutchings 5).

Just as with more traditional kinds of scholarly, critical, and theoretical discourse, every professional scholar and teacher need not always engage in the same kind of inquiry or discourse in order to make use of or contribute to that discourse. If the goal is to foster an academic culture where all teachers are trained and able to engage in 'systematic investigations' and intellectual inquiry on teaching as part of the fabric of their professional lives (even if they do not always do so), then the scholarship of teaching and learning cannot be seen as an activity merely engaged in by a few people who 'do' that kind of research, or an activity only engaged in by research faculty with an interest in teaching, at the kind of institutions that afford them the luxury and incentives to do so in an extensive way.

Furthermore, we think there is a good case to be made that there is a difference between the scholarship of teaching and learning and the 'scholarship of discovery' conducted on teaching even if they overlap and inform each other. We must keep our definitions as open and expansive as possible if we are to find the most productive ways of embedding pedagogical and curricular innovation in a context of intel-

lectual inquiry. As Hatch and Austin put it, "To reflect the best of both worlds, the scholarship of teaching demands both a certain respect for scholarship and teaching and a healthy skepticism about the effectiveness of the methods and forms of doing both" (1).

However systematic these investigations become they must begin with fundamental questions, or as Lee Shulman puts it, "a vision of the possible, or the experience of a problematic" (Bass, 1999). At the very least, all of these essays engage in the scholarship of teaching and learning by giving us rigorous reflection on the *problematics* of introducing technologies into American Studies, Ethnic Studies, Women's Studies, literature and history, all rooted in the nature of learning and knowledge in these fields.

We can identify four different kinds of problematics represented in this volume. The four categories of problematics we want to explore below are; (1) problematics that arise from *teaching for enhanced student understanding* of essential disciplinary and interdisciplinary ideas and skills; (2) problematics that respond to the opportunities presented by the *expanding spaces* of virtual environments; (3) problematics that conceptualize new technology environments as related or integral to the *formation or reformation of interdisciplinary fields*; and (4) problematics that arise from the *shaping necessities* of trying to make the best use of distance and distributive learning environments. These categories, of course, are not mutually exclusive and in many cases more than one plays a role in the rationale for course experimentation. But we think it is useful to consider each separately.

*(1) Teaching for student understanding*: The first and most fundamental category of problematics is the one that arises from the fundamental challenges raised by the complexities of learning culture and history, especially in relation to helping students develop real understanding of what Rand Spiro calls 'cognitive flexibility' in working with the 'unstructured' knowledge that characterizes the culture and history fields.[13] These types of generative questions include: How do you use online resources to mediate the problem of multivocality in history against narrative coherence? How do electronic primary resources help teach more authentic approaches to history and culture studies? How do you begin to teach students to negotiate the complexities of multiple interpretations with no single right answer or master narrative? Technology is then considered as one of many ways to approach these pedagogical problems. "Can we find ways of using hypermedia," asks John McClymer, "to create courses which are recursive, which enable students to find multiple points of entry into the topics covered, and which encourage authentic learning? Can we do all of this without

making our courses so content-thin as to be empty exercises?" (218) Similarly, Tracey Weis, in a course on US History and women's activism, seeks "to use electronic discussion lists and electronic archives to foster specific forms of historical literacy, i.e. narrative interpretation and narrative construction; —to enhance students' ability to construct nuanced narratives about the social relations of race, gender, class, sexuality, and region in America" (247).

At some level, this is the fundamental challenge for all the cases in this volume: if critical analysis of cultural complexity, contradiction, and signification—not a set of facts, events, or texts—is at the heart of the new study of culture and history, then how do we best develop student understanding through a process of discovery, rather than the delivery of instruction, and what role might technology play in that process? Thus, the first problematic grows out of the desire to do better what is most valued in teaching, irrespective of new technologies.

*(2) Expanding Spaces*: A second category of problematic arises from responding to opportunities presented by the Internet and new technologies to do something that was simply not possible before, or at least would have been very awkward and unwieldy. We think of these opportunities as relating to the 'expanding spaces' for communication and representation that new technologies offer.

These capacities are especially compelling in terms of connectivity and the use of dialogic technologies that enable communication across differences. For example, Kathy Walsh, seeking to employ a multicultural pedagogy, but teaching at a relatively isolated and homogenous community college in Central Oregon, observes that 'much multicultural pedagogy assumes a multicultural classroom.' She begins then with the question: is it possible to find diversity, and make pedagogical use of it, *virtually* if it doesn't exist *locally*? In her case study, Walsh then describes her experiments connecting with a very different course population across the country and guiding (along with the other instructor) the two classes' engagement with difficult and challenging intercultural material.

Bill Bryant identifies a similar problematic in seeking the use of the Internet to respond to many theorists' claims that American Studies ought to become more internationalized. "Over the last twenty years or so," he observes,

> many Americanists have moved toward the conviction that American culture is best understood within a global context. In the classroom, this conviction creates an imperative to teach an internationalized American Studies that locates

> American culture amid a complex of interactive world cultures. Within the last few years communications technologies have opened up new possibilities for accomplishing this task. The Internet in particular is a readily accessible channel through which we can see aspects of American culture circulating around the world, changing and exchanging amid the multitude of people, technologies, ideas, information and capital that constitute an increasingly visible global community. But what specific pedagogical strategic can take advantage of the Internet in the American Studies classroom? (273)

Developing international diversity and a global perspective is one kind of activity made possible by virtual spaces; a different kind of interdisciplinary activity that is difficult to replicate without technology is the use of electronic spaces for the creation of virtual exhibits and other constructive projects. Jo Paoletti, speaking of her courses on material culture in America at the University of Maryland (not in this volume but described in *Engines of Inquiry*) explains that her use of technology did not begin with the question "how am I going to use this wonderful new technology." Her experimentation began with a problem: "How am I going to teach my students to think like curators if I don't have a museum, I don't have objects, and the classroom belongs to somebody else in 45 minutes? Where am I supposed to find the space to create exhibits?"[14] Like Paoletti, Pete Sands, in his case study here, uses a different virtual space—a MOO—to explore whether it is possible to make more effective the study of utopias as socially constructive cultural acts. All of these examples make use of new media technologies in their potential for enabling active and situated pedagogies that would be difficult to achieve in non-virtual environments.

*(3) Field Formation*: A third kind of problematic has to do with the affinities between technology and the formation of new fields as well as interdisciplinary knowledge itself. The destabilization of the *representation* of knowledge in virtual spaces has a powerful affinity with the reconfiguration of field formation in the interdisciplinary study of culture and history in general. For example, Melinda de Jesús says of Asian American Studies and the use of Web technologies: "My incorporating student web authoring in ETHS210 must be understood as an aspect of contemporary Asian American Studies theory and pedagogy today. . . . Underlying this theoretical shift is a reconsideration of the discipline's commitment to linking intellectual discourse, community activism and social justice—a very tall order". De Jesús insists that she wants

> to make the technology work *for* me—*for* the goals of Asian American Studies *within* my specific teaching location at SFSU, not the other way around. Thus my goal this past fall was to utilize new media technology to further my own political/pedagogical interests: to foster intellectual inquiry in the discipline, to resist the anonymity of a largely commuter school by valorizing intimacy and interactivity throughout the course, to foster intensive personal investment in and ownership of the discipline itself, and to build community simultaneously in real-time (in the classroom) and in cyberspace. Moreover, I wanted to emphasize Asian American agency and creativity as expressed in its art and cultural forms, and to underscore my classes' efforts as an important example of the creation of a literal web of Asian American culture itself. (295)

Similarly, Ivy Schweitzer for her course in Women's Studies argues that there are many connections between the rich, messy and problematic availability of resources and the goal of Women's Studies to explore and analyze the mechanisms of information and power so as to help make students critical consumers of cultural productions. Says Schweitzer:

> We also believed that the vast resources of the Web would enhance the students' intellectual experience. Feminist pedagogies often operate in academic arenas of interdisciplinarity, where knowledge is not static but evolves out of the interstices between traditional disciplines and methods. Such pedagogies try to be self-conscious and self-critical about the implications of their positions and the way in which they produce knowledge and constitute subjects of study. Both as a high-powered research tool and an efficient retrieval system for a vast and expanding 'infosphere,' the Web makes available an array of information that encourages students to design provocative connections to fields that might have otherwise been closed to them or hard to reach. (354)

Given the amount of theoretical (and political) discussion devoted to the boundaries of disciplinary and interdisciplinary cultural studies fields, there is very little pedagogical discussion that focuses on learning (as opposed to content). And indeed, there are numerous affinities

between interdisciplinary studies and new media technologies. As Sherry Linkon puts it in her response essay in this volume, "new media technologies fit well into the pedagogical values of American Studies, but they also fit well into the field's continuing paradigm that change motivated by self-examination should be a dominant practice in the field" (421). What cases like those by de Jesús, Schweitzer and others point to is the general problematic that emerges from the meaning of these shifting boundaries: not merely that new paradigms of knowledge can *make use of* new pedagogies and new tools, but perhaps that they may even *require* them for full realization.

*(4) Shaping Necessities*: As the case studies of Robbins and Pullen, Ewell, and Butler make clear, abstract concerns about changing knowledge paradigms are increasingly relevant to more pragmatic matters of distance and distributive learning technologies. This then is a fourth category of problematic: the desire and or necessity to make use of distance education technologies without sacrificing, and perhaps even enhancing, high standards of learning and pedagogical philosophy. In many ways these problematics *do* begin with the technologies (and institutional realities thereof), with the challenge of retaining the best and most fundamental pedagogical values in these new environments. As Barbara Ewell explains in her case study about the creation of an entirely online course on Southern Literature:

> My principal concerns in teaching the initial course were two-fold: how to make an online course genuinely interactive and how to provide sufficient input without simply producing full-fledged lectures, which I knew would be both impractical to create and counter to my basic teaching praxis. Having been committed for more that two decades to the basic principles of feminist pedagogy and its de-centering precepts, I was hardly willing to relinquish them to a machine. If I were going to be teaching online courses regularly, I had to be sure that I could maintain the pedagogical principles that I had come to view as essential. (101-2)

Whether the 'vision of the possible' begins with a pedagogical challenge, the alchemies of disciplinary transformation, or the contingencies for making the most judicious use of emerging technologies, two truisms seem to be constant throughout these essays: one, that the questions posed at the beginning of the course development process shape the direction of the experiment; and two, that new, unexpected, and

deepening questions always arise as the pedagogical, technological, and theoretical issues collide and synthesize in practice.

The framework outlined earlier responds to the question of 'why bother proceeding with technologies,' and provides the justification, we believe, for moving forward, albeit with a balanced and critical approach. The idea of a scholarship of teaching and learning discussed here—as the institutionalization and formalization of reflective practice—gives us an intellectually defined basis for moving forward in a way that can keep us attentive to the complexification of those questions and begin to provide a common vocabulary and knowledge-base by which to build communities of practice.

The identification of problematics is the salient point of departure for the hypothesis of course design and the intellectual inquiry of teaching as reflective and effective practice. Compared to our capacity for articulating complex problematics in traditional scholarship, research, and theory, the questions we are able to ask (and answer) about teaching and learning are relatively simplistic. It is critical for us all to continue working toward increasingly sophisticated ways to articulate teaching *problematics* as the nexus of a *framework* of new media capabilities in particular knowledge domains,on the one hand, and, on the other, the tools, concepts, and discourses of a *scholarship of teaching and learning*. We have only begun, for example, to comprehend how one communicates 'strategic knowledge' from expert to novice learners; how one shapes, scaffolds, and sequences a constructivist approach to learning; or how one measures student learning in culture and history curricula increasingly shaped by theoretical complexity and expansive intellectual diversity. And all of this is made that much more complicated by the integration—and saturation—of new media technologies.

The 'pedagogical content knowledge,' and vision, that informs a teaching problematic goes a long way in shaping the choices one makes in course design and the understandings one derives from analyzing what happened in the unfolding of that course. The problematics that inform the course design hypothesis in new media learning environments form a nexus between the potentialities of the framework and the investigative structure of the scholarship of teaching and learning.

With this in mind, we want to explore in the final section of this introduction, how the authors of these case studies, and their 'experience of intentions,' respond to some of these challenges and make visible the increasingly complex questions that we all must address—as a community—in the future.

## *Patterns of Practice, Directions for the Future*

A 'vision of the possible' changes with each horizon of experimentation and development. Thus, our goal here in this last section is two-fold: working from the framework we outlined in the previous section we want to convey some of what we can learn here about patterns of good practice. But in this volume, and in the work of other innovators, what gets revealed is not just workable approaches or smart techniques, but intimations of major transformations in the way that the *teaching* of disciplinary and interdisciplinary cultural knowledge produces *learning*. We also want to use this section as a way to *begin* outlining some directions for continued classroom research and the scholarship of teaching and learning in the culture and history fields.

To cite Cynthia Selfe one more time: "If, as a profession of English teachers and educators, we have learned anything about computers after experimenting with these machines over the course of the last decade, it is that we have much to learn. In fact, we have just begun to realize that our whole notion of learning must change radically in the face of the challenges posed by the virtual age" (25).

Indeed there is no better place to look for the directions and parameters of that radical change than into the heart of reflective experiments with pedagogy and technology.

### Authentic Activities and the Cognitive Processes of Expert Learners

In his response essay in this volume, Gregory Jay notes:

> I especially want to draw attention to the potential that computers and the Internet offer for revolutionizing the teaching of research. In case study after case study, the Crossroads projects show a remarkable realization of the often deferred dream of making undergraduates partners, even leaders, in researching such fields as American history and culture and American literature. This development transforms students from receivers of information into producers of knowledge, radically altering the day-to-day practice of the classroom. The result can be the fulfillment of a long-sought change in pedagogical norms, away from hierarchy and passivity and regurgitation and toward a student-centered structure of active learning. (396)

By drawing attention to 'research' and its connection to 'student-centered structure of active learning,' Jay implies not merely the capacity of new technologies to engage students in various types of interactions or merely give them access to new and diverse primary texts, but specifically to engage them in the kind of interactions and investigations undertaken by expert learners in the field. As John McClymer puts it in his case study,

> Students learn best, many of us are convinced, when given 'authentic' tasks, i.e. when asked to do what actual practitioners in our fields do. This is the logic that underlies the case study method in law and business schools as well as in internships of all types. The sense that the challenges and frustrations they encounter are the same as those that people 'in the field' have to deal with strengthens students' morale and their resolve. . . . Despite examples of authentic tasks all around us, however, much (most?) of what we ask students to do is ersatz. (217)

As we discussed in the framework section, there are many dimensions of new technologies, *prima facie*, that can contribute to the engagement of novice learners in authentic inquiry activities, especially the access to new primary resources and the supple search and retrieval tools that allow their manipulation. Yet, as with all matters of technology and pedagogy, the presence of resources and tools is only part of the story. The most formidable and meaningful challenge is to engage students in authentic tasks in such a way that they can see, experience, perform, and articulate the *processes* of expert cognition.

Across the case studies in this volume we can find many examples where the building blocks of approaches informed by the pedagogies of expert cognition—situated learning, cognitive apprenticeship, strategic knowledge—are being modeled. And in the experiences of these investigating faculty we can see directions for future experimentation and systematic research. As we briefly review these, we want to propose an extension of the idea of 'strategic knowledge' beyond 'problem-solving strategies' (which are of course critical) to also include other cognitive processes germane to advanced secondary and collegiate level teaching of interdisciplinary study of culture and history. These authentic activities—which follow on and build from the framework—include:

*access to a wide variety of resources* that bring to the foreground the need for students to exercise choice and judgement over them;

emphasis on *interpretation and adjudication among multiple sources*—including multiple media—as fundamental skills and building blocks to higher synthesis;

exposure to the *apparatuses by which knowledge representations* are made, and the participation of students in the analysis of the apparatuses as intrinsic to cultural critique and the problem of building *narrative coherence out of multiplicity*;

the use of *dialogue and conferencing as a means to 'rehearse' interpretations* and explore *idea-formation as a socially discursive act*;

the creation of *situated learning experiences* with an emphasis on the perspectival nature of knowledge;

engagement in constructivist activities that emphasize *authentic collaborative processes*; and

the capacity to participate in the shaping of reconstructed learning spaces and the context *to develop a critical consciousness* about those spaces.

Building these activities into student-centered, technology-rich environments requires careful structuring and sequencing, as well as the skill and wisdom of teachers as expert learners more than ever. being attentive to the needs and expectations of students, as well as to the changing role of faculty, will be critical to the ongoing discovery of ways to make the visibility of expert thinking processes an integral component of culture and history education.

## Resources: Reading, Interpretation, and the Apparatus of Access

Speaking of the difficulty of American history textbooks to "provide an accurate, full account of the diversity, complexity, and moral culpability of American history and society," Chris Lewis, in his case study, argues that "The World Wide Web is a perfect example-as-opposite for this because it instantly makes available an endless array of multiple, competing perspectives on American culture and society. In fact, the Web is a virtual cacophany of multiple voices, some of which are wonderful primary sources of information and some of which are wholly biased or inaccurate. And yet, it is because of this multivocality that students, with some guidance, can get closer to gaining an understanding of history, can get closer to gaining an understanding for evaluating

what they read on the Web, can get closer to constructing their own context for the interpretation of events past, present and future" (309-10).

Reflecting on a course in contemporary American culture, Mary McGuire makes a similar claim for the Web: "By bringing the Internet into these courses, I wanted to engage students in the contemporary discussions of current social and political realities in the U.S. and around the globe, and to show how these realities are framed in academic and in popular discourse. I asked them to locate and analyze sources of information that, for the most part, came from outside the academy and were intended, often polemically so, for a far wider and less specialized audience" (334).

McGuire's point, like that of Lewis, is not that all of the information on the Web is quality or to be trusted. In fact, quite the opposite; and that is the point. In exposing students to the variety of materials on the Internet, says McGuire, "I wanted to involve them in the critical assessment of these new electronic sources as a means of moving into other discussions about truth, accuracy, bias, reliability, models of research, accessibility of information, misinformation, in short, to understand the production and politics of knowledge" (P?). While trying on the one hand to better represent the diversity, multivocality, and even 'cacophany' of American history and culture, Lewis and McGuire are working with what we might call the 'pedagogy of unfiltered information'—a broad fact of life in the Internet age and an opportunity and context for making visible the 'production and politics of knowledge.' "What makes the Internet special?" asks McGuire?

> In part, I think it is the accessibility of information on the Internet which, while problematic in itself when one tries to use it, does add a certain dimension of the assignment. If students research topoics using print material, they are often limited to those materials published by scholarly or popular presses. Does *Newsweek* really give us access to the voice and experience of a homeless man? A young, radical lesbian activist? What about grassroots community organizers? Or the opponents of Affirmative Action or abortion? There is immediacy in these sources, which gave us the chance to hear voices that we might not otherwise hear, or want to hear. (339-40)

This is, of course, one of the dimensions of the 'convergence of distribution': the apparent compatibility between expansive and inclusive

approaches to history and culture and the capacities of hypertext, multimedia, and network technologies to represent that multiplicity. But the access to multiplicity has the most meaning in the context of its construction as a national past or its comprehension as a system of cultural interdepedencies. In this way, the availability of diverse resources is most valuable not merely for its access but its visibility in the mechanisms of organization, selection, and delivery—what we might call the 'apparatus of reduction.'[15]

With this unfiltered multivocality comes 'overhead,' and most probably a new responsibility for faculty and students to contextualize each piece of information in ways not necessary with traditionally filtered print materials. However, the necessity for contextualization has the capacity, as McGuire puts it, "to involve students in a larger discussion about the politics of knowledge," including such critical questions as: "How and who determines the legitimacy of knowledge? Can we draw the line between valid and invalid sources of knowledge? On what basis?" For more traditional archival materials, similar kinds of questions about sources need to be confronted upfront in ways that teachers are possibly not used to raising them: How do you read a primary historical or cultural source? What is the difference between a primary and secondary source? What kinds of critical reading strategies need to be invoked for different kinds of texts, for example, literary texts as opposed to letters and diaries, oral histories or photographs or political cartoons? What makes an archive an archive? What is the difference between an archive and an exhibit? And so on.

Whether exposure to these questions comes through the analysis of diverse and conflicting perspectives, or the critical analysis of constructed virtual archives and exhibits, digital resources can help make the mechanisms of knowledge-representation less opaque. These skills are not beside the point, as developing sophisticated stances toward sources, corroboration, contextualization, and conflicting perspectives is a critical part of the 'intermediate cognitive processes' of expert learners.

For example, John McClymer, in his course on Women in US History, works with the benefits of new and wide resources not related to the wide-open nature of the Web, but select and circumscribed archival resources used to contextualize complex events or texts (the difference we might say between *extensive* and *intensive* exploration.) McClymer describes something in his case study very close to the cognitive apprenticeship model in which he begins by posing a particularly enigmatic and complex passage in a speech by Women's rights pioneer Paulina Wright Davis as a 'problem-solving' opportunity. Then he intro-

duces students to an array of text and image resources he has carefully selected and mounted electronically as a carefully tailored archive. These sources give students what he calls "multiple points of entry" into the rich context for the complex passage. Next, he gives them a "guided tour" of each resource which serves as an important scaffolding for student encounters with the texts themselves.

Extensive and critical involvement with resources can also fit well with strategies for distributing responsibility for making knowledge in the classroom. After his "guided tour," "students divided themselves into groups, each responsible for one source." This helps structure the next couple of class meetings as students become responsible for contributing to a collective understanding. "Over the next two meetings, students reported on what they found. Class discussion focused first upon individual sources and then upon the ways in which each shaped the way one might read the others. Virtually everyone found something unexpected. . . . Reporting meant commandeering the professor's computer at the front of the classroom and showing what each had found" (220). In keeping with the apprenticeship goals of scaffolding and sequencing, these open exploratory activities are then carefully built into the next more complex steps of working with deeper and more extensive materials and collections, in which they were asked to find their own 'artifacts' which they then had to relate to the current historical interpretation they were reading. In this process, the distributive nature of student discovery was connected and synthesized through the teacher's coaching:

> They submitted their choices, along with a one-page explanation, an hour before class via email. In class I again surrendered control of the computer and project and allowed students to show each other what they had uncovered.
>
> Email affords a major advantage for organizing classes of this sort. Because I know in advance what students have found, I can organize their discussions and presentations more efficiently and more unobtrusively. I know which students to ask to compare their choices with those of the last speaker and can explain succinctly why I am asking them to speak at this juncture. Students soon realize that I am asking them to speak because I think they have something specific to contribute. (220)

Here then is one way that wide access to resources (the benefit and bane of the Internet) becomes closely tied to the 'flexible performance capability' at the heart of teaching for *understanding*.

The thorough inclusion of students in the construction of knowledge, through resources, can also extend to the mechanisms of course design, perhaps the most significant (and invisible) narrativizing influence on student understanding in culture and history courses. In her case study, Tracey Weis privileges in an early assignment the exposure of students to "one of the central tensions of historical interpretation: the difficulty of constructing a coherent narrative that includes multiple voices or perspectives" (252). This assignment is juxtaposed to the engagement of the class in a discussion of the course's design and their own articulation of "the knowledge they were making about woman's history."' Weis observes, "The online syllabus review exposed the architecture of the course as contingent, in part, on student willingness to assume responsibility for making some choices about coverage and material" (251). All of these examples point to the shaping influence of new resources, not merely for wider choice of materials, but for bringing to the foreground concerns about primary and secondary source literacies, and the role of those literacies in the most fundamental understandings of knowledge and knowledge-production.

## Authentic Conversations: Dialogue and Distribution

All of the learning goals above are at some level authentic, and engage novices in the kinds of thinking done by expert learners, from working with simulated archives and virtual resources, to positioning students as teachers if only for their selected 'discovered' artifacts, to engaging students in conversations about the contingencies of course design itself. Similarly, the capacity of electronic communication and online writing spaces for 'making thinking visible' is also most powerful when linked to the idea of authentic learning and expert learning processes. As Weis puts it,"'Generally, teachers and other students have limited access to other student-readers' encounters with texts. Since readers read texts in relative privacy, these encounters, whether intimate and profound, or impersonal and superficial, remain largely hidden . . . . Inviting students to share, via class listserv, their individual reactions (questions, doubts, observations, conclusions) to texts transforms what had previously been essentially a private matter into a public act" (255).

As teachers of writing have known for some time, it is very powerful for students to share their writing and thinking with others, not only for peer collaboration and critique, but also to 'objectify' their own writing

to themselves, when they consider it as a public expressive act and not a private transaction between teacher and student. In the context of culture and history courses, we can take this idea yet a step further in making connections between the public expression of student writing and thinking,and the development of resource-based interpretations of cultural analysis. In speaking of the use of email and electronic small group conversation, Weis claims ". . . the mail exchange encouraged some students to 'rehearse' their interpretations of the readings in the relative intimacy of a small group. By focusing on a particular reading and by responding to a specific question, students established individual points of entry for the subsequent in-class discussions. Some use the listserv to express confusion or lack of understanding, while others employed the electronic discussion space to ask questions and to advance analyses" (257).

This idea that students are able to 'rehearse' their ideas in draft is importantly related to authentic learning. That is, it helps teach the idea (again at the center of current approaches to writing instruction) that the process of expressing one's ideas is fundamentally *social*, not only in the desirability of having an audience to help form and practice ideas, but in the idea that the discourse into which one enters is fundamentally formative of the expression itself. There is a symmetry here, then, between a belief in the development of critical thinking as a social and discursive act, and the idea that the production and construction of knowledge is social as well, since knowledge itself is developed and known through discourse. Scholarly knowledge is always communal. As John Bean reminds us, in theorizing the connection between disciplinary thinking and writing across the curriculum, "What our beginning college writers do not understand, therefore, is the view of academic life implied by writing across the curriculum, where writing means joining a conversation of persons who are, in important ways, fundamentally disagreeing. In other words, they do not see that a thesis implies a counterthesis and that the presence of opposing voices implies a view of knowledge as dialogic, contingent, ambiguous, and tentative" (18).

An integral part of this process, then, is the *layering* of public and collaborative discourse. In the Weis example above, there is a productive relationship between the small group email conversations (as the 'rehearsal' space for ideas) and the class discussion list, where more synthesized (and increasingly sophisticated) ideas are aired. One promising direction for further classroom research is to do more systematic studies of the way that ideas emerge and develop in distributive classroom conversations: what resources or scaffolds prompt certain

kinds of key terms or concepts? How can they be made visible and prominent? How do key ideas get transferred and disseminated among other class members? How do ideas stall or disappear?

Similarly, in his case study of using online conversations to build connections between his class in Iowa and classes in Hong Kong and the Netherlands, Bill Bryant describes how students participated in the online collaborative project on "two levels," the "first consisted of ongoing informal conversations" in which students exchanged information about themselves and their sense of place and origins. These informal conversations, which were themselves framed by "a vocabulary and a set of concepts," supported the second level of participation which "involved reading and responding to four articles and analyzing a virtual community;" these in turn lead next, "with a set of guiding questions," to students posting responses to the articles and responding to the posts of others. The "staircasing" of student interaction from informal to formal conversation, and then to more analytic writing and response, is echoed in the conceptual structure of the course which engaged students with the idea of community at multiple levels, including ethnographic observation of a virtual community of their choosing. As Bryant describes:

> Students also spent time in a virtual community of their choice, discovering what sorts of people participate, who is excluded, how they represent themselves, what customs and norms seem to characterize the community, what holds people in the community together, what sort of relationship the community has with the physical world, etc. I presented this portion of the project as an exercise in ethnography, asking students to immerse themselves in the communities while framing their experience within a set of critical issues stemming from our readings and discussions. In their write-ups, students identified and outlined an issue centered on the topic of community in America, presented the results of their 'field work,' then applied those results in their analysis of the issue.' (281)

The use of ethnography both as practice and an analogy is also a way to help foster student reflection on their own learning (the 'metacognitive' dimension). And, as we will discuss further below, developing their own position as participant-observers in online communities appears to be an effective way of helping students develop critical perspectives both on the nature of community and social discourse, on the

one hand, and the power and politics of online environments, on the other.

Online environments also afford students the opportunity to observe, and possibly participate in, scholarly conversations as well. In Weis' case study, she relates an episode from the national online "Women's History Forum," one of a series of online national history forums sponsored by American Social History Project, in conjunction with the Website "History Matters" (George Mason University). Weis describes how she shared the postings from the forum, both electronically and in print, with her class. Such sharing is possible, she concedes, with print sources as well. But the potential for "interactivity represents the 'value added' by technology"' as the "prospect of a real audience" inspired students to reply promptly and productively. One example she relates was her class's response to a posting by Carl Schulkin, one of the participants in this project and contributors to this volume:

> For example, I forwarded Carl Schulkin's request—'What I need most are recommendations from experienced survey teachers regarding readings in Women's History which have engaged their students'—with a brief preface 'What kind of presentation of women's history would have engaged you in high school? Would you recommend any essays or documents in Major Problems? What about Jo Ann Robinson's memoir-[would that be] good for high school students?' (253)

As Weis explains, "Schulkin's request encouraged students to assess Robinson's memoir from yet another vantage point," including one student, Maureen, a "prospective social studies teacher:" "Schulkin's query drew Maureen into a national network of scholars and teachers engaged in women's history. Furthermore, it prompted her to synthesize her own high school experience as a pre-service educator to formulate a rich and reflective response" (254).

The authenticity of the episode can be attributed not only to the opportunity for participation in a 'live scholarly debate' but also the opportunity for "perspective switching" afforded to the students, switching from learners to situated 'experts.' There are numerous pedagogical approaches that can take advantage of perspective-switching, from peer writing critique to reciprocal teaching methods. All of them can be effective ways to promote significant student understanding of material; and most of them can be facilitated and often enhanced with new media technologies.

Situated Learning and Perspective Taking

In the book *Constructionism in Practice*, Edith Ackerman observes,

> I believe that both 'diving in' and 'stepping out' are equally important in reaching deeper understanding. . . . As the Chinese saying goes: 'The fish is the only one who does not know that he swims' (anonymous). People cannot learn from their experience as long as they are entirely immersed in it. There comes a time when they need to step back, and from a distance reconsider what has happened to them. They must take on the role of an external observer, or critic, and they must revisit their experience 'as if' it were not theirs. They need to describe it to themselves and others, and in doing so, they will make it tangible. (28)

Many of the technology-enhanced pedagogies described here are effective means for helping students "revisit their experience 'as if' it were not theirs." For example, since many of Bill Bryant's students came from rural communities in Iowa, they developed through their international conversations both perspective on their own culture, as well as "an awareness of how global technologies can influence international perceptions." Similarly, Kathy Walsh's students in Central Oregon, working through the issues raised in Spike Lee's *Do the Right Thing* with diverse class population at Long Island University, are able to revisit their own subjectivity and bias through dialogic communication.

In a completely different way, John McClymer has his students switching perspectives, through an assignment culminating the activities of archival exploration, by asking them to imagine they are editors. This is a pedagogical move not only inspired by student-centered method but the mechanisms of archival representation made so visible by digital resources. "The challenge for students," says McClymer of the editor assignment, "was to sort through the different accounts, reconcile conflicting versions of the speeches, and make sense of the rhetoric they encountered. They were then to write a review of Woloch's account [their text] of the origins of the woman's rights movement. They were to imagine themselves as her editor: 'What changes would you suggest? What material, if any, would you ask her to consider dropping?'" (222).

In yet a completely different context for perspective-taking and what John Seely Brown and others call 'situated learning,' Gabrielle Foreman, Ron Buckmire, and Donna Maeda at Occidental College discuss their

efforts to engage students through a convergence of academic course content, critical awareness of the students' social contexts, and the nature of Internet technologies:

> By using the Internet, we fostered empowered learners and producers of knowledge who approached their own education with more active engagement. They tended to recognize themselves as potential agents of change in various situations: from refusing racism, homophobia, and sexism in their presence, to challenging methodological approaches and assumptions in academia that reinforce traditional power inequities, to more traditionally activist/organizing roles. Increasingly, students were able to see themselves in relation to complex worlds around them, as evidenced by the sophistication of their analyses on their online and 'formal' writing assignments. Their Internet-based communications with each other via forum pages and web sites also increased their interactions with each other's ideas about difference and power in large and small group discussions. Situating concerns about the digital divide in the context of such active engagement on numerous levels enabled students to see themselves as social actors in contexts of racialized, gendered, class-based differential relations of power.' (329)

In looking at all these examples, we are left with a set of questions for the future: How might we—as a community of investigators—systematically foster and assess this kind of apparently powerful learning, in which students connect with academic issues of culture and history through such affective dimensions as seeing themselves as "potential agents of change" and "social actors in contexts of racialized, gendered, class-based differential relations of power"? How might we capture the essential connections between student empowerment and learning rubrics for sophisticated cultural analysis? How do we foreground this development in curriculum design, as well as the design of online learning environments? What sorts of investigative and assessment tools—such as benchmark reflection—might we use to better understand what kinds of learning activities and environments (scaffolding, sequencing) can help us realize the interdependencies between values and knowledge in the culture and history fields? These are all important questions if we are to take these intimations of powerful possibilities to the next level.

## *Reconstructed Learning Spaces*

### Constructionist Activity as a Collaborative Process

In many ways, as Rina Benmayor points out, constructionist and collaborative activity is an integral part of authentic learning and expert knowing. "Ironically," she says, "my own experience as an oral historian has been within a collaborative framework, and as part of an interdisciplinary team. And yet, I was asking my students to do otherwise" (178).

As with other authors, such as Alan Howard at the University of Virginia (described in *Engines of Inquiry*), as well as teachers of English who offer their courses in networked classrooms, Benmayor wants to make the classroom—either wholly or in part—a collaborative workspace, where "even very simple electronic applications" are good at facilitating the "learning process, enhancing communication, building teamwork and collaborative construction, facilitating reflection and interpretation, enabling socially responsible research, and allowing almost instant archive-building" (181). Among the many uses of technology to facilitate the "labor intensive" work of oral history was her students' ability to product and share a "working digital archive of primary interview document."

> From a pedagogical standpoint, the ability to easily confront texts in their original and edited versions—in their visual, spoken, and written representations—provides a richer palette for illustrating the constructed nature of the interpretation itself. . . . The single authoritative control of a body of material and it interpretations can be reshaped into a more polysemic dialogic model, where multiple and competing interpretations of and debates around a same body of material are linked. (187)

Engaging in this kind of work makes it possible to involve students in situations where the 'intermediate processes of cognition' are likely to come into play. In these contexts, constructive activity is not about building collaborative products, per se, but collaborative *processes*. As Melinda de Jesús describes: "I developed web authoring projects to emphasize both writing as process and as community: working together as a class to gain mastery of web authoring skills, critiquing each other's pages, and collaborating on interactive assignments underscored writing as a communal experience and the Web itself as an important

example of community building" (296). Although sometimes, especially in these early days of network pedagogies, students can get distracted with the details and frustrations of constructionist activity, there is plenty to indicate the advantages of collaborative development of media rich representations. As de Jesús justifies it, "Sometimes students can get too carried away with the technological or graphic design side and neglect to develop the critical/analytical aspects; nevertheless, instructor emphasis on *web-authoring as process* will go a long way towards creating a balance here (as will having students rate each other's sites). . . . Collaborative student work was edgier, riskier, and more interesting: not necessarily better written, but it engaged in the material and the subject in often deeper, different ways" (305).

Collaborative and constructionist activities are another authentic approach for making visible the apparatuses of the creation and construction of knowledge. Although the nature of learning may look different from traditional approaches, there is much anecdotal evidence that student understanding can be significantly increased with their participation in constructive activities. Pete Sands, in using MOO and MUDs as constructivist social environments for teaching utopian literature, speculates:

> My experience teaching two sections of this course, taught over two different semesters with slightly different emphases in course requirements, suggests that student interest and quality of learning about utopian literature increase in proportion to the amount of 'building' students do in the MOOspace. It may be that my conclusions *only* apply to teaching utopian texts, at least in the way I am reading the trails left by these two courses. It *may* be that having students build MOOspace will help any class form a 'community,' but it is also possible that unless a critical consciousness about the nature of community or social structures is a goal of the course, engagement with course content could be negatively affected by the time-consuming and tangential work on a MOO—time that would be better spent using other forms of electronic interaction, such as email discussion or peer-review of papers. These are activities that the MOO software also provides, but I am limiting my conclusions here to the impact on teaching utopian literature. (147)

Sands' cautions and questions are well-taken, although many others teaching different kinds of topics and issues, have found similar results.

Nonetheless, we have much more to learn about the real impact of 'building' on the development of knowledge—and 'critical consciousness'—in culture and history courses. One of the research challenges for further experimentation is the problem that many questions of student understanding and development are not measurable in the span of a single course, but across several courses, or even a course of study. Thus, it may be that fully understanding the impact of constructivist pedagogies and constructionist activities needs to be undertaken within programs, majors or concentrations. We also need to keep asking systematic questions about the impact of constructive activities in virtual spaces—whether it is MOO space, Web-based hypermedia environments, or whatever—as such courses become less anamolous or idiosyncratic in the curriculum.

The isolation of constructionist innovative approaches in the curriculum speaks to still yet another area of research challenge, which is to respond to the kind of phenomenon that de Jesús identifies, where collaborative student work was "edgier, riskier, and more interesting: not necessarily better written, but it engaged in the material and the subject in often deeper, different ways" (305). We need to keep developing better profiles of good practice—and data on the causes of positive outcomes—to capitalize on the "edgier, riskier, and more interesting" nature of collaborative cultural projects, while also raising our expectations about student performance and the analytical and compositional quality of those performances.

## Hybrid Character of New Learning Spaces

It may seem obvious to say—but worth saying anyway—that the future of technology-enhanced education is not in the judicious use of technologies, but in the powerful combinations of technology-enhanced approaches with other kinds of approaches. Indeed, technology aside, optimum learning environments are most probably those that balance *instructional* (teacher-delivered) approaches with *discovery* models of learning. One of the most valuable kinds of 'pedagogical content knowledge' revealed in these pages, then, are the lessons learned about balance and combinations of approaches, and the hybrid character of new learning spaces. The nature of this hybridity is quite varied and yet only touched upon in the rich reflections in this volume. They include the thoughtful interaction of Susan Butler's 'online lectures' that require, she believes, full participation in online peer conferencing to make maximum sense. The combination approach—what she calls the "lecture-to-conference" format is her attempt—through an

online distance learning course in a community college setting to engage students who might otherwise not be engaged in the subject, represent diverse and marginalized voices in history, and finally serve "to create an interpretive narrative about our nation's past."

Very different from Butler's combination of online lecture and interactive conferencing is the intersection of the *virtual* and the *local* enacted in the 'site critiques' in Robbins and Pullen's case study . Two key assignments in their course on nineteenth-century women's work are site critiques—one a web-site critique, the other an "historic site critique." "Students used the same questions in evaluating both the 'virtual' web-site and the 'real' historic site, because we wanted to emphasize that both kind of sites were actually shaped in some similar ways by different technologies and purposes" (134). In bridging the virtual and local, they also are encouraging students to critique the apparatuses of knowledge production: "For example, we wanted students to understand that web-sites are constructed to present a specific point of view, just as historic sites are preserved and presented to the public in order to convey a particular interpretation. With such parallels in mind, in their evaluations of each type of site, students were asked to analyze what happened to their understanding of nineteenth-century women's work during their 'visit,' whether to the virtual or the physical site" (134). And finally, the double site critique is situated within an authentic perspective when they ask: "Specifically, if you were to become a 'manager' of this site (e.g., as a web page master or as a docent), what changes might you make in the site to make it work better as a source of knowledge about women's work? Why?" (134) Not only does the engagement in hybrid learning environments serve the goal of building a critical perspective on knowledge construction, it also highlights the *materiality* of knowledge and the knowledge representations embedded in material things, a concern at the heart of interdisciplinary American Studies and related fields.

## *Changing Faculty Role*

### Changes in Teacherly Authority and Learning

In reflecting on her students' use of email to 'rehearse' their ideas, and her role in creating coherence from those rehearsals, Tracey Weis comments: "Pondering the multiple paths that students had traversed in the 'out-of-class' electronic discussion prodded me to re-formulate the relationships between individual class sessions and to reimagine the kinds of intellectual work that I expected from myself and from my students"

(265). Mary McGuire senses a similar transformation in her role, beginning with the new abundance and access to resources:

> I also know that using web-based instructional technology in my courses has caused me to reconsider not only how I design a course, but how I implement it as well. I know that I have been forced to reconsider the location, source, and control of knowledge and its production. And I also know that I have come to a greater understanding of the students who share these courses with me. Using the Internet in my classes has provided a glimpse into students' perceptions of the world that I am not certain I would ever have accessed, at least in the same way, when I controlled the course content entirely through more intellectually legitimate sources. Frankly, it scared the wits out of me when a student contributed a web site promoting mail order brides from Asia to our online threaded discussion on contemporary U.S. politics and society. But I also learned some lessons that I will never forget: how to help students look past the obvious, to challenge their own assumptions, and to justify one's own positions and actions on an intellectual and not merely personal level. I also learned something important about trusting my students to take command of the sources and information they use and, also, to give them the power and the responsibility that goes along with that control. Of course, that is what we all do in the classroom, regardless of the tools we use. I do not want to insist that somehow technology provides the key we have lacked to unlock our students' minds. I do want to insist, however, that it has enabled me to rethink what I am doing as a scholar and teacher. (336)

And, again, Kathy Walsh experiences something similar in her Internet experiment with cross-country diversity: "While my primary objective was the multicultural outcome of anticipating and respecting a diversity of responses to the texts, I also found that the project was beneficial in transforming my own role in the classroom, from expert, which, as a cultural outsider, I clearly could not be, toward facilitator of my students' and my own learning. . . electronic cross cultural encounter, I was able to encourage my students to look elsewhere for authority"(174-75). And yet, while most of the faculty in this volume experience a transformation in their teacherly authority, as we've seen in many of the examples cited above, that transformation is hardly an

erosion or diminution, but merely a shift, and one that may also fit well with the pedagogical and theoretical philosophies underlying many of these fields. Says Ivy Schweitzer, "I do not want to give up entirely the authority of expertise, experience, or evaluation of students. Rather, I think we should explore how feminists can model different ways of being authoritative, not authoritarian. One of the ways we established in WS10 of subverting the structural effect of teacher authority was to turn part of the process of coming to critical self-consciousness over to the students" (352).

The compatibility (and synergy) of student-centered approaches and reconstructed learning spaces can create an uncertain context for faculty looking to the future of their professional role. Surely there are institutional and economic pressures of which we have good cause to be wary; on the other hand, we believe that much of the current anxiety about transformations in the faculty role are fueled by the relative dearth of data and experience in dealing with issues of learning in sophisticated ways. For example, commenting on Barbara Ewell's descriptions of online teaching in his response in this volume, David Shumway argues:

> It is true that online courses like the ones Ewell describes require a live teacher to interact with the students. But if the course materials can be designed by a senior faculty member—or perhaps purchased rather than created in house—then one can easily imagine adjuncts being hired for minuscule compensation to provide such *interaction*. We faculty must insist that universities call online courses what they really: an inferior alternative to classroom courses. (429, emphasis added)

We disagree with Shumway in that there is no reason to believe by definition online courses are inferior. However, online courses will be inferior if they are taught by teachers—adjunct or tenured—who are less able to pay attention to the interactive processes or the dynamics of the technologies. His reaction also betrays a traditional and prevalent assumption that ultimately it is *content-delivery* that takes skill and training, and that *interaction* can be pulled off by anyone with minimal training for minimal compensation. Yet Shumway also claims that the most important activity of faculty (and the chief virtue of traditional classroom teaching apparently) is helping students master "difficult intellectual tasks" and learning to "read arguments." Presumably, these are learning processes in traditional and nontraditional contexts alike that

depend on the skill of the instructor to engage students interactively (with the material, with the teacher, and with each other).

In the context of online interactions then, the place for expert skill isn't 'elsewhere' (in this case the traditional classroom), it's just that we don't as yet know very much about what it means to exert our expertise (our pedagogical content knowledge) in virtual environments. As Ewell puts it for her specific context, "There is definitely an art in knowing when and how to intervene in electronic discussions; at least we can try to anticipate when such cruxes might arise and then learn from experience how to adjust our timing" (108) Paul Lauter makes a similar point in his response in this volume when he reflects that "the new media do not offer forms of escape from the creative difficulties of teaching. The grounds upon which our resourcefulness is played out shift significantly when we use a device like the online discussion group, but the problems of teaching are not dispelled; they are changed" (414-15).

As much of the rhetoric around the inferiority or dangers of online teaching reveals, higher education has done very little to investigate what is knowable about the art and science of interaction, and to assimilate it into all faculty's 'ways of knowing' in their disciplines. One impact of teaching with new technologies is being able to see in new ways the often neglected understructure of teaching and learning, and further prompting their systematic investigation.

## Need for Faculty to be Proactive Shapers of Technology

And yet Shumway is right to fear that faculty might lose control of the curricular process in an electronic era. That is why we believe that what is made clear in these experiments, with all their accompanying promises, problems, and transformative possibilities, is the need for faculty—intellectually, politically, and pragmatically—to be highly proactive in shaping the agendas for teaching, learning, and technology. As Mary McGuire argues it in her case study:

> I also believe that faculty must take the lead in instructional technology for higher education in order to control its use for college instruction. But whether or not my experiments with the Internet in my courses truly enabled me to challenge and cross the boundaries of knowledge with my students is a less clear outcome. I still believe the potential is there and must be seized, but with caution and with the clear recognition that we are in many ways dancing with the devil and must be self-conscious and self-critical about

> what we are doing. The boundaries of knowledge are being tested with the Internet, but we may not be able to control the ways in which they are being redrawn and the ways that may then shape the sources, production, and control of knowledge in the future. (344)

And similarly, Melinda de Jesús argues not only for activity in understanding and using technology, but proactivity in creating the resources that help define possibilities for interdisciplinary fields: "Asian American Studies teachers must take the time to become familiar with and adept at introducing new media technology. We need to delve into this area and *define* its parameters before the technology itself defines our discipline *for* us! One way to start would be to address the dearth of good web sites and multimedia in Asian American Studies by requesting grant money/course relief to develop good, scholarly sites and media for classroom use" (306).

All of this serves to remind us of the challenge raised by Richard Lanham early in his book *The Electronic Word*. Speaking of the future of English Studies, and asking if it is only in the business of "Reading Books," Lanham asks:

> You must decide what business you are really in. You can conclude, of course, that that ineffable something cannot be transplanted, that the business you are really in is Reading Books. Many areas of endeavor in America pressured by technological change have already had to decide what business they were really in, and those making the narrow choice have usually not fared well. The railroads had to decide whether they were in the transportation business or the railroad business; they chose the latter and gradual extinction. . . . For all its fastidious self-distancing from the world of affairs, literary study faces the same kind of decision. If we are not in the codex book business, what business are we really in? (6)

Collectively, the essays in this volume raise these same questions. At the least, they suggest that we are also in the *learning* business, and not merely the *teaching* business. If we want to go forward into the 21st century not merely inhabiting *teaching culture* but *learning culture,* then we must attend closely to our "information ecologies," and the "relationships between people, tools, and practices" that constitute them. If we learn more about learning, and if we get better at investigating, articulating, and facilitating learning in new environments, we might be less

afraid of, and perhaps less in danger of, being displaced in a wired educational world.

## Notes

[1]CSILE stands for *Computer Supported Intentional Learning Environments* (see, for example, http://www.ed.gov/pubs/EdReformStudies/EdTech/csile.html); the Center for Children and Technology (and it five year federally-funded subgroup, the Center for Technology in Education) was originally a part of the Bank Street School in New York City and is now affiliated with the Educational Development Corporation (see http://www.edu.org/CCT/). Project ACCESS was a hypercard project on nineteenth-century American culture and history conducted jointly with Brown University and local secondary schools; Intermedia was a project conducted by the Institute for Research in Information and Scholarship (IRIS) at Brown University, best made known through the work of George Landow; Howard Gardner is the best known of the theorists at Project Zero, where they have been pioneers in the idea of 'teaching for understanding.' Surely there are other important antecedents and influences that we have inadvertently omitted.

[2]Our thanks to Donna Duffy, of Middlesex Community College, who introduced us to Schon's ideas in an unpublished essay on the scholarship of teaching, called 'Swamps and Scholarship.'

[3]The passage comes from James Carey's *Communication as Culture*. See also Leo Marx and David Nye.

[4]Western Governors University information primarily drawn from WGU website (http://www.wgu.edu Leavitt quoted in 'WGU Board Approves Budget,' in WGU Newsletter, Vol. 2 ,#3, August 1997. Romer quoted in WGU Press Release 'AT&T Grant Boosts Western Governor's Bold Education Project,' 2/4/97. Information on enrollment from 'Virtual University Virtually Empty,' Las Vegas Sun September 16, 1998, by the Associated Press (http://lasvegassun.com/sunbin/-stories/text/1998/sep/16). See also 'U. of Phoenix's Faculty Members Insist They Offer High Quality Education,' by Courtney Leatherman in The Chronicle of Higher Education, October16, 1998.

[5]The 'Digital Divide' study is on the Web at http://www.ntia.doc.gov.ntiahom/digitaldivide/; See also, Cynthia Selfe's on the political and ideological dimensions of new media design in Hawisher and Selfe (1999); also see Selfe and Selfe, 'Politics of the Interface'; the new collection of essays edited by Todd Taylor and Irene

Ward, *Literacy Theory in the Age of the Internet,* for numerous interesting perspectives on the impact of concerns about equity, access, and educational democracy on literacy instruction.

[6]'EUIT' is an acronym for 'Education Uses of Information Technology,' an intiative associated with the organization EDUCAUSE (formerly EDUCOM). Kozma and Johnston formulated a list of ways that technology can support learning across the curriculum (see *CHANGE* magazine, 1991); see also *Applying the Seven Principles of Good Practice for Undergraduate Education* by Chickering and Gamson; and 'Implementing the Seven Principles: Technology as Lever,' by Chickering and Ehrmann; the Epiphany Project for the development and technology of teachers of writing, was originally funded by Annenberge/CPB and directed by Trent Batson and Judith Williamson; for the classifications of writing technology in the context of writing instruction and literacy theory see Hawisher (1994), where she also discusses Fred Kemp's conceptualization of technology in the context of writing theory.

[7]From Ed Ayres, 'The Futures of Digital History,' unpublished paper delivered at the Organization of American Historians, Toronto, April 1999.

[8]Cited in *Engines of Inquiry, p. 1-12.*

[9]For more on constructionism and its relation to new media technologies, see Perkins, Wilson, and Kafai.

[10]See, for example, Johnson-Eilola's *Nostalgic Angels*, and Haynes and Holmevik's *High Wired*.

[11]Thomas Hatch and Kim Austin, unpublished paper on the scholarship of teaching, to be published through the Carnegie Foundation for the Advancement of Teaching (Menlo Park, CA): http://andrew.carnegiefourndation.org/.

[12]Pat Hutchings, of the Carnegie Foundation for the Advancement of Teaching introduced the idea of a 'methodological middle ground' in a group email conversation; William Cerbin, of the University of Wisconsin, La Crosse, one of the leaders in the documentation of teaching and the course portfolio, used the phrase, 'between high science' etc.

[13]For more on Rand Spiro, et. al. and the idea of 'cognitive flexibility' see John McClymer's essay in this volume.

[14]Paoletti made these comments in the *Engines of Inquiry video*.

[15]See for example, Bass (1999).

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# II. CONSEQUENCES
## (Case Studies)

# Literature