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Computing: What's American Literary Study Got to Do with IT?

Two encounters, five years apart, inspired the question in my essay's title. The first one occurred in spring 1995, when the *Dickinson Electronic Archives* was launched. A long-term fellowship from the Institute for Advanced Technology in the Humanities (IATH) at the University of Virginia had enabled the Dickinson Editing Collective to develop this hypermedia archive of the manuscripts of Emily Dickinson. By 1995, my colleagues in the University of Maryland English department had begun to hear that not only was I developing this scholarly Web site, and possibly a CD-ROM, but that I also planned to devote much of my intellectual energy to a critical digital edition of Emily Dickinson's correspondence.¹ The most senior Americanist in the department, who had chaired the committee that hired me, stopped me in the hall. "What is it I hear you are up to?" he inquired. As I began to tell him about my work in digital studies, my excitement grew, but so did the furrows in his brow. He lowered his voice and, sotto voce, implored: "This is the English department, not computer science or mathematics. You will never be promoted to full professor doing this kind of work."

Five years later, I was a full professor and director of the Maryland Institute for Technology in the Humanities (MITH), funded by a Challenge Grant from the National Endowment for the Humanities. In late winter 2000, two highly regarded humanities computing scholars were about to visit the University of Maryland as guests of MITH. For their joint presentation, they had no title. Flyers had to be produced, announcements made. When I called each of the speakers, they both told me to use whatever title I thought best. As I sat in my office,

staring at my computer screen, I thought about what they were likely to say as well as how my colleagues throughout the English department and the College of Arts and Humanities generally responded to digital studies, new media productions, cyberculture studies, and the complex markup schemes of computing devised specifically for literary texts, all of which had come to shape the routines of my scholarly life during the last half decade of the twentieth century.

My office at the time had a glass wall overlooking the Reserves Room in the main research library. At that moment, Reserves was packed, each student working separately in an individual study carrel. I mused upon my colleagues' response to humanities computing as I peered down into a quiet room full of scholars working separately in the traditions of the individual talent. In response to my excitement about this brave new world of electronic text encoding, digital imaging, digital sound reproduction, and transmission of all of these via the World Wide Web, DVD, or CD-ROM, colleagues would often insist that digital studies has no relevance to their own areas of literary critical inquiry. And I would continually puzzle over this resistance from scholars working in Americanist traditions that include such key critical studies as Leo Marx's recently reprinted *The Machine in the Garden*, still a classic after 35 years.² As I pondered these matters, Tina Turner was in some way serving as muse, for although her voice was not blasting from my cool new computer speakers, the title for our visitors' comments suddenly came to me: "Computing: What've the Humanities Got to Do with IT?" I knew immediately that I had seized upon the proper technological tool—which is of course what titles are—to convey a sense of what the audience could expect to hear. That title bears repeating now and is, in fact, perhaps even more relevant, for in our swiftly changing world of ever larger (gigabyte-size) pentium chips, larger RAM requirements (4- instead of 3-digit megabytes) for personal computers unimagined five years ago, sleek 20-inch or larger flat screen monitors, OS 10 MAC operating systems that have married UNIX, and Windows XP operating systems as well as new on-line resources (books, scholarly journals, major literary research archives, virtual museums), hard-headed evaluation of computational strategies and their relationships to our low-tech world of crumbling printed pages is more relevant and important than ever.³

My examples here will focus on American literature—and most

often on the *Dickinson Electronic Archives*, MITH, or IATH, because these are the digital productions I know best. But my observations apply as well to other major Americanist projects, such as *Making of America*, a cross-institutional collaboration; *Documenting the American South*; and *Uncle Tom's Cabin and American Culture*.⁴ In fact, they apply to all fields of literary study, as well as to humanities study in general, and thus my critical reflections begin with observations about the phrase that describes the discipline now inextricably conjoined in my working life with that of American poetry and literature: humanities computing.

To some, this phrase might border on the oxymoronic. The *OED* defines computing as “the action of calculating or counting,” especially with a computer, specifically an “automatic electronic device for performing mathematical or logical operations.” Such defining terms call to mind not poetry, novels, or plays—the stuff of literary history—but logarithms, algorithms, arithmetic, processes, or sets of rules. Whatever philosophical rigor imbues our critical inquiry, no literary theorist I have heard argues that her work computes, performs the hard logic bound by sets of rules, or processes via algebraic equation. By contrast, we find the humanities defined as “learning or literature concerned with human culture” in all its messiness and imprecision. Humanists—professors of literature, art, history, music, theater—think of ourselves not as tribes of information technologists but as knowledge producers.

Yet increasingly scholars are interested in challenging what are in fact relatively new disciplinary distinctions. Defining *humanities*, the American-originated *Webster's Tenth* includes in its list of “the branches of learning regarded as having primarily a cultural character” both literature and the calculating, computing fields of equations, exemplifying the cultural branches of knowledge as “usu. including languages, literature, history, mathematics, and philosophy.” And in defining myself as a humanities computing specialist, I join a group of scholars who have been arguing for the profound advantages of employing computer resources in our literary work for the past generation or more, even before the advent of the World Wide Web in the early 1990s. In 1949, for example, Father Roberto Busa initiated the first electronic text project in the humanities, *Index Thomisticus*, a concordance to the works of Thomas Aquinas. At this point, extending

many of the arguments made by these proponents of humanities computing, I believe that digital resources are more than advantages for our work—they are necessities.

The necessities are demanded by several developments, but I will content myself with mentioning two: the budget and funding crisis in the book and paper-bound journal publishing industries, which are the technologies by which we judge whether someone should be rewarded with a career in postsecondary humanities—with, in other words, promotion and tenure in a college or university; and the crisis in humanities education—the diminishing roles of professors, lecturers, graduate students, and other humanities workers in the rapidly evolving, increasingly corporatized university. I do not mean to suggest that publishing on the Internet can simply replace book publication or stop the drift of higher education toward profit-driven enterprises. But it can certainly provide us with a means to think about how to overhaul a system whose priorities are, in some cases, questionable and in others—such as the traditions for awarding tenure—untenable. And in the process, digital publishing technologies offer not only potentially wider audiences than those of the Gutenberg galaxy but also creative new directions and more visibility for our work. Humanities computing offers several technologies that already serve humanities education and scholarship well and will do an exponentially better job as more humanists consciously exploit them.

Designating the resources under discussion here as technology may surprise some readers. What I label technologies are the means by which we accomplish various ends—the tools and devices on which our critical suppositions rely. In what follows, I will focus on four areas in which I believe the humanities will significantly benefit from the tools afforded by the new technologies, areas in which we may turn our “crises” to productive ends.

Primary Materials: Democratizing the Technology of Access

Democratizing access to primary materials involves a more capacious range of objects to study and treasure and a much wider audience of readers able to examine these previously unavailable resources. In the digital environment, both terms of access—numbers of objects and numbers of audience members—are facilitated on an unprecedented

scale. By access in the first instance I refer to BE–O objects—artifacts that have customarily been viewed By Experts–Only. Making available images that were previously locked away in library and museum archives for exclusive view by a very few is probably the technological boon with which scholars and readers are most familiar, for such access really is quite a big (and well advertised) affair. That which primary materials get to be seen and who gets to see them are both changing at such a breathtaking pace informs the more demotic ethic characterizing new paradigms of scholarly editing in the digital realm. No longer is the image of a Dickinson or a Whitman manuscript available only to the eye of the specialist, who gets to view the original artifact or its photostat replica, while only its verbal description (represented in editions usually made by the access-privileged specialists) is available to the general reader.

On-line, the common reader can now view images and painstakingly encoded (thus deeply searchable) transcriptions of Dickinson's poetic and epistolary manuscripts; of Whitman's drafts for "Song of Myself" and "Calamus," as well as all printed editions of *Leaves of Grass*;⁵ and of hundreds of nineteenth-century American novels. These technologies make more visible the quantity and variety of work that has gone into the making of American literary history. Such access to primary and out-of-print materials was unimaginable only a decade ago. In fact, most scholarly editorial projects are still produced as if this kind of access is not possible; thus, detailed notes, rather than digitized photographs with detailed notes, are the conventional surrogates for the objects under study.

An outstanding example of a contemporary variorum employing high standards but nevertheless relying on detailed description and print translation to serve as surrogate for the manuscript text is R. W. Franklin's *The Poems of Emily Dickinson* (1998). Expected to set the standard for Dickinson study, this edition depends almost entirely on description and print translation to help readers visualize Dickinson's poetry. Representing her lyric poems, in all their various versions, Franklin contextualizes them with the twin assumptions that Dickinson's highest writing goals incorporated the conventions of poems she saw published in the print medium and that she thus held to conventional genre distinctions between prose and poetry. In Franklin's introduction are eight exemplary halftone photographs to demonstrate how he regards Dickinson's compositional practices and what he con-

siders the key characteristics of her writing habits. With only eight images to represent writing across 1,789 poems (by Franklin's count), many with multiple drafts or copies (thus the number of documents represented by the eight images easily exceeds 3,000), assessments of Franklin's generalizations depend on highly selective, subjective criteria. From the examples and the print translations, the new variorum's readers are asked to imagine the record of Dickinson's literary work, which is practically all in manuscript. Franklin is especially concerned with transporting lyrics from the messiness of Dickinson's written work, so he separates text that has been or can be identified as a line or stanza of a poem from writing that may be poetic but has not been deemed poetic enough to count as a constitutive part of a lyric. In doing so, Franklin's judgments and subsequent representations, or print translations of Dickinson's poetry, are usually formed according to codes of hearing and metrical conventions, not codes of seeing.⁶

Franklin's position is certainly reasonable. After all, Dickinson's writings indicate her acute consciousness of and work within and outside nineteenth-century conventions of poetry, which were driven by aurally oriented metrical designs, such as iambic tetrameter, and *abab* rhyme schemes. However reasonable, such a position is nonetheless presumptive, as are all editorial projects in determining what scholarly and general readers alike get to or do not get to see of Dickinson's writing practices. Thus, access to data that, in turn, is used to render critical judgments is mediated, the presumption being that there is a consensus around the meanings of the data to be found in Dickinson's manuscripts (how lines are arranged horizontally and vertically; where lines are physically broken; what marks of punctuation go up, down, or are curved in unconventional ways; and what her lower-, upper-, and middle-case letters might signify), especially in regard to their trajectory toward publication of her work.

The presumed consensus is that the ideal Dickinson envisioned for her poems was a printed corporealization. In other words, Dickinson critics have characteristically imagined her poems as print objects, assuming that any variable in the handwriting that does not cohere with the regularizations of print is due to her personal writing utensils and that such accidents need not be conveyed to readers. As it is transmitted into print, manuscript data is accordingly mediated. The *Dickinson Electronic Archives* has not solved the problem of data mediation, but the technology allows us to involve readers differently

in the experience of Dickinson's manuscripts, especially in regard to their trajectory toward publication. The reader can actually trace for herself each document's journey from Dickinson's desk to a correspondent or to a manuscript book or to a sheet left unbound, then to an editor, to print, to the image on one's computer screen. With this focus on process, images of extant manuscripts are offered for readers' perusal, and readers can then test assertions that Dickinson's poetic embodiments clearly evolved, that for her, the "iconic page, or the image of the poem, moved from the printed to the handwritten object."⁷ By contrast, centering editorial judgments on the printed poem results in offering print translations for readers' perusal and appraisal. Thus, decisions about the meanings of Dickinson's holographic marks and choreographies (angled marks, line breaks, letter cases, arrangements on the page, and juxtaposition of genres) are, as my examples show, necessarily made for readers of print editions.

What are the costs, then, to us as critics, interpreters, and theorists if what is being argued about cannot be seen by the readers who must judge the validity of the arguments? In the case of Emily Dickinson, and more than a half century of authorized, purportedly definitive productions of her texts, debates about the erasure of aspects of her graphocentric corpora have been launched in books and journals, and audiences have been asked to formulate opinions without access to evidence and without sufficient reflection on the ways in which knowledge and texts are produced and reproduced for our field. On what, then, would we base evaluations of her textual play and literary experimentation that depend only or primarily on those analytical descriptions? Extending that question to American literature in general, on what do we base our histories of authorship, textual play, and literary experimentation?

To see and then judge the examples provided thus far, readers of this essay might find it irritating to have to turn to the computer, sign on, and log in to determine whether what I have written about Dickinson's manuscripts is accurate; they might then argue that this new unwieldiness in navigating among media is one of the problems with digital studies. If that is the case, then I ask that readers simply trust my descriptions of the contrasts between Johnson's and Franklin's typographical choreographies and that of Dickinson's own hand, and also trust that the editors' hands make ontological commitments for texts being definitely prose or poetry that Dickinson's manuscripts

do not necessarily make. My request asks no more faith from the reader than Franklin, Johnson, and Ellen Louise Hart and I ask for any of our print editions of Dickinson's handwritten works. Just as I ask you to trust my analytical description if you do not want to take the time to examine the images in the *Dickinson Electronic Archives*, so each of the Dickinson editors asks readers to trust the accuracy of his or her analytical description of manuscripts housed in libraries where you cannot see them. Such faith in editorial accuracy underwrites any print edition. Without examining the images of the handwritten texts produced so differently by Johnson, Shurr, Franklin, and Hart and I, readers cannot evaluate, for example, whether Hart's assertions about "Morning / might come" are acute insights or overreaching arguments.

The physical grammars of "Morning / might come" show that, like many other poets, Dickinson began to mingle and choreograph the elements of prose and poetry to produce what Susan Dickinson called "letter-poems." Hart notes that this letter-poem's first segment concludes with the extraordinary logic that "doubt measures the strength of commitment that faith demands and is itself the form in which faith continues," that Dickinson in turn marks this leap in faith with a "leap in the [letter-]poem, which appears physically as a break between" segments. The letter-poem "pairs opposites that are actually complements, morning and night, faith and doubt, eternity and memory, finally leading to the poem's central pair, 'Sue' and 'Emily.'"⁸ The print translations of this Dickinson missive produced by Johnson, Shurr, Franklin, and Hart and I are all hieratic. Inscribed in our transcriptions are choices about genre (and thus textual identity) that are forced upon the reader by the editor(s). Like all makers of print editions, each of these Dickinson editors beseeches readers to have faith. Thus, any notion of a definitive print edition is not only hieratic; it is faith-based.

A medium that reproduces images as well as print translations of Dickinson's holographic and handmade literary works creates opportunities for far more members of her audience to take into account elements of writing practices not seen in print. Many more pairs of eyes have the opportunity to join in informed debate about Dickinson's manuscripts than has been previously possible. Humanities computing and the group work it requires can engender a critical ethos that is decidedly more demotic. It makes clear to readers what editors have long known: editing is interpretation, critical storytelling, writ-

ing.⁹ Editing actually produces a narrative, a story or set of stories, about texts. Humanities computing allows “readers” both to witness the process and to participate in it. Thus I see the *Dickinson Electronic Archives* as an extension of the kind of project that Ellen Louise Hart and I undertook in *Open Me Carefully: Emily Dickinson’s Intimate Letters to Susan Huntington Dickinson*. In that work, we sought to represent the context of Dickinson’s writing literally as part of that process. That Dickinson “published” herself in her 99 or more correspondences, and that the bulk of the writing she shared with her contemporaries went to a single audience, Susan Dickinson, actually requires that we think differently about genre when we read Dickinson. The electronic archives allow us to make that case—to show how process is inextricably a part of product, how her manuscripts show that she was not bound by the print-determined distinctions between poetry and prose. And best of all, the technology allows the readers to draw different conclusions based on their own first-hand experiences not only of the materials but also of the editorial process; something closer to a critical, rather than a priestly, method can therefore drive definitions of and critical debates over what constitutes a Dickinson poem, a letter, a letter-poem. A decade ago such widespread access to her manuscript work and the consequent ability for the scholarly community to take in a much wider range of readerly opinion was unimaginable.

Although my example is from Dickinson studies, the technology has the potential to intervene positively in the canon debates, again providing access to material deemed not financially expedient to publish. Those involved in recovery projects have long been aware of how the publishing industry skews literary history. A “minor” woman writer as prolific as Catharine Sedgwick, for example, is known primarily by only one work (*Hope Leslie*) while every long-canonized novel that James Fenimore Cooper published is available in an affordable paperback. Via electronic publications, such as *Early American Fiction* at Virginia’s Electronic Text Center, a much broader scope of texts written by “minor” writers can be made available than the one the print industry has been able to bear; can foster critical inquiry into a much wider range of African American, Asian American, Native American, and other “minority” writers and texts; and can offer thereby a much richer sense of literary history.¹⁰

**Technology of Multimedia Study Objects, Digital Surrogates,
and Born-Digital Artifacts**

If technology has given us new access to original manuscripts, the new media have also introduced new means and standards of organizing and structuring information. Initiatives calling for quality in encoding standards (such as Text Encoding Initiative, or TEI) will require even the most scrupulous editors to be more responsible and accountable, as the details of editorial processes and practices become more widely visible. Moreover, because critical editions can be revised without incurring the expense of reprinting, the editorial process will be increasingly dynamic and collaborative. These changes will encourage editors to exploit theories and practices of structured information for creative ends.

Additionally, on-line editors must make decisions about how to translate textual material into, and preserve it in, digital form (in what are known as markup languages). Crucial components of any multimedia display, markup languages make a tremendous difference in determining what kind of electronic tool is at a researcher's disposal. Markup languages can significantly enhance search and retrieval capacities, thereby transforming the way scholars conduct research.

For example, indexing and cataloging are tools for completing successful research that many take for granted. The Library of Congress catalog numbers point precisely to the spot in the stacks where a book should be. Yet book indexes are not so precise, for they point to the page and not the exact line that might be sought. Web searches are even less precise. Every researcher familiar with the Web knows its powerful ability to ferret out resources not so easily obtainable from conventional library finding aids, but Google and other Web-based search engines will return thousands of hits for every item sought. As with book indexes pointing to pages and not specific lines, search engines, depending on HTML markup, point to a URL on which information can be obtained but not to the exact place on the Web-based document. By contrast, SGML and XML markup provide for unparalleled textual search, navigation, and retrieval facilities. When documents are marked up with one of these languages, especially using the protocols of TEI, search results point directly to the place in the text one wishes to find. Via the XML/TEI-encoded markup, a researcher can quickly arrive at the exact location of the information desired and

does not have to depend on searching by name or title or place alone. In fact, because retrieving word strings is possible, the markup allows searches that no index could ever provide. The constraints of HTML tagging limit searches to exact matches solely on the displayed page, unless one has access to a search engine that can search an entire site. For example, a search for the letter *I* would yield all instances of *I* on a single page. By contrast, texts encoded with XML/TEI can distinguish between *I* used as a pronoun and *I* used as the heading of a chapter. Through an XML-aware search engine, multiple pages can be easily searched, as can more subtle variations on words, phrases, or themes, facilitating uniform retrieval of contemporary and archaic language, nicknames, or even euphemisms. Thus an XML-encoded text or series of texts would not only retrieve a search term such as *greed*, but also an archaic synonym like *avarice*, as well as any other more remote references throughout a text, regardless of the number of pages involved.¹¹ Annotations in such a digital publication are likewise marked up and can be searched in ways no book provides or can be made to provide. Thus, one advantage of digital surrogates for texts is the publication of highly structured information that will expand and deepen information retrieval with precision and scope heretofore impossible. A vast new potential for scholarship emerges as these new search tools not only enable but actually encourage us to unbind ourselves from exclusive reliance on the familiar subject-author-title catalogs.

Digital surrogates are not only textual; electronic publication incorporates audio, video, and high-quality imaging that books simply cannot reproduce. These diverse elements in publication provide innovative forms of annotation that can powerfully demonstrate the relevance of scholarly work in ways that the variorum, the compendium, and even the reader's edition have not, even as these audio, visual, and image-based elements offer new avenues for critical inquiry. Incorporating multimedia, critics have the opportunity to develop interpretive approaches that account not only for the role of spatial and temporal dimensions but also for technical features such as text encoding; hypertext design; Web design; and sound, image, and video delivery in the production of works' meanings. One of MITH's closest collaborations at the University of Maryland is with the David C. Driskell Center for the Study of the African Diaspora. MITH's work with the Driskell Center and with David Driskell, widely

considered the nation's leading authority on African American art, focuses on exploiting new media resources so that the scholarship and art displayed through MITH and the Driskell Center reach as wide and diverse an audience as possible. *Hughes@100*, a Web-streamed poetry slam celebrating Langston Hughes's legacy, is one product of this collaboration.¹² These digital resources aim to be *of* the medium and not simply *on* the medium in order to incorporate as many ways of communicating complex ideas and relationships as can be imagined.

An important resource being developed along these lines is *Dark Passage: A Chronology of the TransAtlantic Slave Trade*, which relies on the Web designer tool Flash.¹³ Able to create frame-by-frame animations that stream and include sound, Flash offers content creators ways to choreograph expressions of their ideas, critical observations, propositions, and theories that import auditory and visual performances impossible to render through words. When a user chooses a date from the slavery time line—1481, for example—the information that the Portugese built “Elmina, the first of scores of infamous slave castles dotting the west African coast,” is not simply conveyed linguistically but is augmented by African song and an image of the castle. Thus the form of critical expression can be radically altered, possibly to profound effect.

The advantages of this technology are evident in a project such as *Titanic Operas, First Folio: A Poets' Corner of Responses to Dickinson's Legacy*, which features digitized readings by twentieth-century women poets.¹⁴ Listeners can hear and see poets like Gwendolyn Brooks, Maxine Kumin, Adrienne Rich, and Toi Derricotte reading not only Dickinson's but also their own poems as they honor the centennial of the New England poet's death by reflecting on her legacy in American poetry, specifically for women poets. This technology not only marks a return to emphasis on the aural, which for centuries was the poet's tradition, but also adds the dynamically visual to the experience of poetry. Dickinson herself surely had in mind the power of sensory input when she wrote: “[A] Pen has so many inflections and a Voice but one,”¹⁵ for tone binds linguistic elements into meanings, removing ambiguities produced when tone is not evident. If these transmissions are more conscriptive, is that necessarily problematic? Why should scholarly commentary, even on the literary, be sentenced to grammatical units and textual logic only? Whether it be the memory of slavery or a Dickinson poem, texts do not live simply on the

printed page. The new media challenge us to consider what can be gained by amplifying our critical commentary into more media and how our critical-theoretical tools can be shaped to exploit multimedia most effectively.

New Models of Work: The Technology of Collaboration

For the humanist tribe, at least in the Western world of the academy, the primary work model has been the singular author-scholar sitting at her desk, like the students I observed in the Reserves Room, laboring independently. Even after decades of critical understanding informed by insights about the corporate nature of the author and the author function, humanities scholars remain invested in individualistic notions of genius and authorship, which are in turn inscribed in the academy's promotion and reward systems. In contrast to our colleagues in the sciences, who value coauthorship, collaborative humanities work is often, perhaps even usually, seen as inferior to that produced alone. By its very nature, humanities computing demands new models of work, specifically those that exploit the technology of collaboration, for humanities computing projects cannot be realized without project managers, text encoders, scanners, visionaries, and others with a variety of responsibilities to produce effective multimedia projects. Although these models demand different kinds of formulas for evaluating and rewarding individual contributions and thus additional work for referees and for tenure and promotion committees, the necessity that work in humanities computing be self-consciously collaborative is all to the good (not least because recognizing collaborative contributions disrupts our conventional reward systems, which are increasingly recognized as outmoded and themselves insufficiently evaluated).

While collaboration is not easy, learning to work in teams, in laboratories for humanistic scholarship, is worth the investment by humanities scholars in all fields. The challenges of collaboration only begin with issues of who gets credit and reward; there are also issues of who does the most work, and whether the measure is quantity or level of difficulty; of who is going to collaborate with whom, and when; of how to define collaborative groups, who in part define themselves through exclusionary criteria or practices; of how status is achieved through collaboration, because some kinds bring higher acclaim than others.

Still, retraining ourselves to work effectively in teams revitalizes our scholarly praxes, for through these teams, mentoring proceeds not simply downward vertically from professor and senior researcher to student and junior researcher but also laterally from researcher to researcher and student to student, as well as vertically and up from student to senior researcher. Building these teams, these virtual research laboratories for humanities scholarship, will undoubtedly change the way humanists work and greatly enhance one of American literature's most important "commons"—ways of understanding cultural and social developments that have influenced formations of ideology and values.¹⁶ While anyone engaged in collaborative work knows its difficulties, a change in emphasis from the solitary to the collective good promises to alter critical ethos and, as scholars like David Damrosch suggest, may well offer new and productive models for scholarship.¹⁷

Collaboration not only increases the opportunities for critical exchange but also challenges individualistic contests over whose story of reading is the official, the authentic, the authorized one. The technologies that I have been describing implicitly encourage collaboration. The dynamic interplay of the audience, the original writer who inscribes the marks, and the editors communicating these marks to posterity is thereby more likely to open what Emily Dickinson would call "doors and windows of possibility."¹⁸ In turn, these myriad perspectives can enable a much more sustained reflection on the production and transmission of our critical findings, on the mechanisms of authorization, and on the criteria for authenticity. These assessments can then begin to penetrate critical mystiques in ways likely to expand rather than restrict knowledge, and to focus attention more on the knowledge itself than on the individual responsible for bringing it to the fore. Access to such knowledge can in turn foster a variety of new coeditorial collaborations among authors, editors, and readers, for digital surrogates make definitive analytical descriptions neither possible nor desirable.

While print editions are containers for static objects, by definition unchangeable, the world of digital surrogates practically demands new models for editorial praxes in which editors and readers work together, models encouraged by the fact that in a world with access to photographic copies of texts and images, no one has to bear the burden of forging the perfect linguistic description of the artifact.

After all, digital surrogates featuring high-quality full-color images of Dickinson's manuscripts render a more ample sense of their textual conditions, including the conditions for the writing scene in which they were produced. Informed more fully about the textual conditions, readers can collaborate with the postulating editor in ways not possible when decisions have already been made to exclude or include data and seal the result into print.

To think of this model as a collaboration is already to make a case for how new technologies might change the idea of critical practice in the humanities. While that model may still be hard to recognize when we are talking about individual readers, it is more visible when we turn to the editorial practices already at play in the electronic archives. Hart, Lara Vetter, Marta Werner (the other general editors of the *Dickinson Electronic Archives*) agree neither with one another nor with me on every point to be made about Dickinson's handwritten work, but we do not need complete consensus in order to produce digital editions together. None of our opinions needs to override, supersede, act as more definitive than that of the others; rather, the various viewpoints, analytical interpretations, and disagreements can all be displayed and in fact become part of the critical work of the dynamic editions. After all, disagreements about the constitution and ontologies of Dickinson's texts (from determining their genre to what counts as a poetic line and what punctuation her marks represent) are legion, and the various constituencies can be represented in a digital edition in ways that are nearly impossible in print.

Linda Hutcheon's observations in a recent essay in *PMLA* about the more general state of the spirit of critical inquiry warrant repeating:

Academic conferences—even the MLA convention—are often sites of combat and one-upmanship, where a clever and articulate speaker can savage a fellow scholar with razor-sharp wit and be lauded (and applauded) for it. We are a profession that values critical thinking—as we should—but we're also a profession that increasingly defines that quality as the wolfish belittling and even demolishing of opposing positions.¹⁹

By contrast, when editors work together to make as much about a text visible to as wide an audience as possible, rather than to silence opposing views or to establish one definitive text over all others, intellectual connections are more likely to be found than lost. A

brief example from the editorial practices of the *Dickinson Electronic Archives* shows the importance of forging intellectual connections and of having as many pairs of eyes as possible looking at primary evidence. My example also demonstrates how vital are “recent moves to reframe objectivity from the epistemic stance necessary to achieve a definitive body of knowledge to a contingent accomplishment of dynamic processes of knowing and acting” for enriching our intellectual commons.²⁰

Editing *Writings by Susan Dickinson* began in the most conventional way, with a solitary editor (me) transcribing documents in the Houghton Library at Harvard University and the John Hay Library at Brown University. Susan Dickinson’s handwriting is even more difficult to read than Emily Dickinson’s, and no one had transcribed her corpus before, so I began developing a key to her alphabet, recording how various letters were shaped during different times of her life and noting variances between her private draft hand and her performance script for her readers. I transcribed a series of her poems housed at the Houghton and was very excited after determining that one began, “I’m waiting but the cow’s not back [*sic*].” That might seem an odd first line for a poem, but I knew that one of Susan Dickinson’s most beloved original art works was John F. Kensett’s *Sunset with Cows* (1856), first discussed by Barton Levi St. Armand. Later in a short biography for *An Emily Dickinson Encyclopedia*, I interpreted Susan’s draft lyric as a poetic response to that painting.²¹ Reviews of that short biography especially praised me for making the connection and remarking on such an important textual “fact.” Had editing of *Writings by Susan Dickinson* remained a conventional enterprise, the error of what I had deemed and what others had received as fact might have remained inscribed in literary history for years. However, in 1999, Lara Vetter, Laura Lauth, and I began to work on an on-line critical edition of *Writings by Susan Dickinson*, and that made all the difference.

As coeditors working within conventional frameworks, Vetter and Lauth might have relied on my multiply checked transcriptions and photocopies of the originals and worked to coauthor critical notes from analytical description and lower-grade facsimile reproduction. Perhaps we would have found the money for one of them to travel to the Houghton to check my transcriptions yet again, but that trip would probably not have taken place. Many assistants on “definitive” editions never see the primary sources that the head editor sees, especially if

they are graduate students working with a faculty advisor. Concomitantly, many head editors view a primary document once or a very few times and then rely on their notes and perhaps photocopies. Yet to produce an on-line edition, we digitized high-quality color slides taken of the originals so that we could render surrogate images of Susan Dickinson's papers as part of the production. In doing so, we realized that our fact checking would supersede even the most punctilious fact checking used for print transcriptions. Working in concert with one another, we began to improve our respective keys to Susan Dickinson's alphabet, and Vetter and Lauth fastidiously began to check my transcriptions by repeatedly viewing the high-quality, luminous images of the originals. In February 2000, a little over a year into the process, I received an e-mail from Vetter, with the subject line "Houston, we have a problem."

The "problem" was that Vetter and Lauth had identified an error in my work. Vetter's e-mail read: "MN, you're not going to believe this. . . . but. . . . It's not 'I'm waiting but the cows not back' but rather 'I'm waiting but she comes not back.' Laura and I have been working on the dawn and cow poems all afternoon, and we're sure about this. Laura pointed out that it is on the verso of part of SD's notes for a volume of ED, so we might read it now as an homage to Emily. I always wondered how a cow could have outstretched hands. . . ." ²² (see fig. 1). Had we not been working in concert with one another, and had we not had the high quality reproductions of Susan Dickinson's manuscripts to revisit and thereby perpetually reevaluate our keys to her alphabet, my misreading might have been congealed in the technology of a critical print translation and what is very probably a poetic homage to Emily Dickinson would have lain lost in the annals of literary history.

Instead of viewing the "objective knowledge" proffered by a critical edition "as a single, asituated, master perspective that bases its claims to objectivity in the closure of controversy," objective knowledge in the production of a dynamic critical edition on-line can more easily be seen as "multiple, located, partial perspectives that find their objective character through ongoing processes of debate" and through the processes of comparing and evaluating those different angles of seeing. As my example from editing the *Writings by Susan Dickinson* makes plain, objectivity therefore depends on parallaxic perspectives. The locus of objectivity is not "an established body of knowledge . . . produced or owned by anyone" but "knowledges in dynamic production,

I'm waiting but she comes not back
 I fondly call the Rite the fragrant days
 | I won't be much the loss of her sweet
 Such change for a ring of her Grain way
 The Snow ^{John Brown} keeps her for its own
 The man chad wide in wisdom lands
 But in the Autumn Sun & bright as steel
 I know she'll come with outstretched
 | O the the Brown / S.H.L. hands!

permitting fair membership in wear
 Land

vainly call

Wounding ~~Land~~ the loss of her
 Gay Country

going for her sweet
 Country

Sorrowing the loss of her
 Sweet Country

Fig. 1. Susan Dickinson, manuscript of "I'm waiting but she comes not back" (H BMS Am 1118.95, Box 9); reproduced by permission of the Houghton Library, Harvard University (see <<http://jefferson.village.virginia.edu/dickinson/susan/zcow.html>>).

reproduction and transformation, for which we are all responsible.” By contrast, the combative models cited by Hutcheon do not acknowledge how “layered and intertwined” are the “relations of human practice and technical artifact”²³ and how the warring model obstructs rather than facilitates intellectual connections, treating editorial and critical works as “finished . . . achievements” rather than as ongoing research activities and part of a “process of accretion” of editorial technique and knowledge, part of midrash, as it were.²⁴

Technology of Self-Consciousness

As it promotes a collaborative model of scholarship, new technology also demands that we rethink the basic premises of research and its rewards. Self-consciousness is a technology with which humanists are familiar: highly self-conscious literary works are usually highly valued. But I am interested in the ways that this technology unsettles us and in ways that this unsettling can be effectively exploited. Thus I will flatly begin with the proposition that the technology of self-consciousness required by computer encoding of texts produces a healthy self-consciousness about what Bruno Latour and Steve Woolgar describe in *Laboratory Life* as “black-boxing”—which occurs when one “renders items of knowledge distinct from the circumstances of their creation.”²⁵ In black-boxing, critical opinion becomes fact; more often than not, amnesia sets in after that factual instantiation, and having been effectively black-boxed, “fact” becomes “truth.”

My earlier examples show how refusing to take certain data into account black-boxes packets of information so that some analyses are put out of reach while others become practically foregone conclusions. Black-boxing occurs in methodologies that rely on the solitary, revered scholar, the priest, to pronounce what exists (as in the text of a poem) and pass it along to users rather than self-consciously insist on methodologies that rely on many different sets of eyes to observe, record, and analyze data, then agree on what has been seen. Of course, literary scholars have aspired to open their editorial and critical work to such scrutiny long before we had these new media, but as I have been arguing, the new media make it much more effective. A science of human behavior is like “a science of chaos,” about which N. Katherine Hayles observes:

[The phrase] may seem to be a contradiction in terms. In the scientific sense, however, chaos means something different than it does in common usage. At the center of chaos theory is the discovery that hidden within the unpredictability of chaotic systems are deep structures of order. "Chaos," in this usage, denotes not true randomness but the orderly disorder characteristic of these systems. The science of chaos seeks to understand behavior so complex that it defeats the usual methods of formalizing a system through mathematics. Hence the science of chaos has also been called the science of complexity—or more precisely the sciences of complexity. . . .²⁶

Maintaining relentless self-consciousness about how critical "facts" have been produced, about how items of knowledge are part of the circumstances of their creation, is crucial for responsibly providing the provisionality that characterizes the best kind of science of chaos. This acute self-consciousness about the foundational materials taken for granted, but on which we base our critical conclusions, is likewise vital for providing democratizing access to materials while maintaining intellectual rigor. More than a decade ago, before Franklin had produced the variorum, before Hart and I made *Open Me Carefully*, and before I was aware that there could be anything called an electronic archive, I noted that "neither the reproductions of texts nor critical interpretations can be innocent of or superior to politics, since both require negotiations among authors, editors, publishers, and readers. Dickinson interpretation will be powerfully enhanced by cultivating constant awareness of the 'official' repatterning of the variorum, the three-volume letters, and the separate publication of the 'Master' documents."²⁷ My work on the electronic archive has only reinforced these words for me (as it has provided me with tools to make such considerations possible beyond my earlier dreams), and the words apply to the reception of all editions, including any in which I have had a hand.

So how might all these technologies and their potential begin to address crises in publishing and in humanities education? They implicitly argue for new publishing models and for reconfiguring humanities education. New models of publishing are already evolving, in which universities and libraries formulate paradigms of funding and exchange that are not driven by profit margin models. Readers' willingness to spend time with Susan Dickinson's work is undoubtedly

encouraged by the fact that those resources are freely available. There is no charge for viewing them, for printing out transcriptions of them, for incorporating them into scholarly work. In developing models outside the profit-driven box, university presses and libraries also need to play key roles in restoring copyright laws to their original goals, which Siva Vaidhyanathan describes as “encourag[ing] the investment of time and money in works that might not otherwise find adequate reward in a completely free market.” Copyright was intended to promote learning and distribute knowledge for the common good. “When properly balanced,” Vaidhyanathan contends,

copyright allows users to enjoy the benefits of cultural proliferation at relatively low cost through a limited state-granted monopoly. Libraries help that process by letting the wealthy subsidize information for the poor. And a thin, leaky copyright system allows people to comment on copyrighted works, make copies for teaching and research, and record their favorite programs for later viewing. Eventually, a copyright runs out, and the work enters the “public domain” for all of us to enjoy at an even lower cost. But when constructed recklessly [to protect the publisher and not the free flow of information,] copyright can once again be an instrument of censorship.²⁸

I do not have the formula for these new publishing models, but I am persuaded that protecting the flow of information should trump protecting profit in academic publishing. Economic sustainability for such models needs to be achieved outside the reward system of the free market. The newness of this technology—its uncharted domain—offers us the opportunity to examine, refine, and reform our current procedures.

Besides these new models of publishing, new models of scholarly and pedagogical praxes are needed. What would it mean for critical inquiry if we really incorporated a wider range of user and multimedia responses into our critical review processes, for example?²⁹ What if we changed the ways in which we train our students, really incorporating group work throughout our humanities mentoring system? Rather than rewarding work done primarily in a solitary carrel using a single pair of eyes to then report results, serious work on collaborative projects requiring many pairs of eyes to look at and achieve consensus (or generative dissensus) on what is seen could be rewarded and its value recognized. In humanities computing, one cannot work other-

wise. Indeed, humanities computing will continue to change the way humanities scholarship is practiced, expanding objects of study and lines of critical inquiry, thereby making more expansive, responsible critical histories. As these evolutions occur, we need to be relentless in the scrutiny of our tribe's practices. The new media, and the new critical technologies they produce, require that we scrutinize anew how our items of knowledge come into being, who makes them, and for what purposes.

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Notes

- 1 See Martha Nell Smith, Ellen Louise Hart, Lara Vetter, and Marta Werner, eds., *Dickinson Electronic Archives*, Institute for Advanced Technology in the Humanities (IATH), University of Virginia (1995) <<http://jefferson.village.virginia.edu/dickinson/>>. Further references to this source will be cited parenthetically as *DEA*.
- 2 See Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (1964; reprint, Oxford, Eng.: Oxford Univ. Press, 2000).
- 3 These hardware and software specifications will probably be outdated by the time *American Literature's* readers see this essay.
- 4 See *Making of America*, University of Michigan and Cornell University, <<http://moa.umdl.umich.edu/>> (spring 2002); and <<http://moa.cit.cornell.edu/moa/>> (spring 2002); *Documenting the American South*, University of North Carolina, <<http://docsouth.unc.edu/>> (spring 2002); Stephen Railton, ed., *Uncle Tom's Cabin and American Culture*, 1998, <<http://jefferson.village.virginia.edu/utc/>>.
- 5 See Ed Folsom and Ken Price, eds., *The Walt Whitman Archive*, 1996, <<http://jefferson.village.virginia.edu/whitman/>>.
- 6 Sometimes when Franklin's decisions are driven by the work of a previous editor, writing on the same manuscript pages characterized by the same rhythmical and rhyming schemes is dismembered into prose and poetry as if textual geographies are clearly distinct, though they are not, as in the case with "Show me eternity, and I will show you memory" (see R. W. Franklin, ed., *The Poems of Emily Dickinson* [Cambridge: Belknap Press of Harvard Univ. Press, 1998], poem 1658; and William H. Shurr, ed., with Anna Dunlap and Emily Grey Shurr, *New Poems of Emily Dickinson* [Chapel Hill: Univ. of North Carolina Press, 1993], 10; see also Ellen Louise Hart and Martha Nell Smith, *Open Me Carefully: Emily Dickinson's Intimate Letters to Susan Huntington Dickinson* [Ashfield, Mass.: Paris Press, 1998], text #246). Further references to *Open Me Carefully* will be cited parenthetically as *OMC*. Shurr edited

using only print translation (Thomas Johnson's edition, *The Letters of Emily Dickinson*). He marked lines from a single document as poetic and others as prose because Johnson had made some appear stanza-like and others not in his print layout (although all the elements look alike in the manuscript). Although Franklin had access to the manuscript, he followed Shurr and Johnson's lead and allowed the print translation to hold sway. At other times, he discounted print translation and decided that lines that have clear schemes such as iambic tetrameter do not count as poems, though a previous editor had seen them as such. The line "Who loves you most and loves you best" (*New Poems*, ed. Shurr, 95), declared a quatrain by Shurr, is declared prose by Franklin, and in exception to his rule, codes of seeing trump codes of hearing, perhaps because the lyric seems rather inconsequential—of the "low" domestic, and not the stuff of poetry (Franklin, *Poems*, Appendix 13; A-13-3). To view images of these manuscripts, see "Morning / might come . . . Show / me Eternity" (<<http://jefferson.village.virginia.edu/dickinson/letter/hb90.html>>), in "The Letter-Poem, a Dickinson Genre," *DEA*; and ". . . Who loves you most" (<<http://jefferson.village.virginia.edu/dickinson/working/zhl9d.html>>) in "Correspondence with Susan Dickinson," *Emily Dickinson's Correspondences*, *DEA*.

- 7 Martha Nell Smith, "Corporealizations of Dickinson and Interpretive Machines," in *The Iconic Page in Manuscript, Print, and Digital Culture*, ed. George Bornstein and Theresa Lynn Tinkle (Ann Arbor: Univ. of Michigan Press, 1998), 195.
- 8 Ellen Louise Hart, "The Encoding of Homoerotic Desire: Emily Dickinson's Letters and Poems to Susan Dickinson, 1850-1886," *Tulsa Studies in Women's Literature* 9 (fall 1990): 264.
- 9 See Martha Nell Smith, *Rowing in Eden: Rereading Emily Dickinson* (Austin: Univ. of Texas Press, 1992), 1, 18-19, 31, 44, 57.
- 10 See *Early American Fiction*, Electronic Text Center, University of Virginia, <<http://etext.lib.virginia.edu/eaf/>> (spring 2002).
- 11 I am indebted to Susan Schreibman, Assistant Director of MITH, for assistance with this description of heightened searchability with XML/TEI encoding. The example given here is part of her contribution to MITH grant and conference proposals; see "MITH's Mean, Lean Versioning Machine," *ALLC/ACH 2002 Conference: New Directions in Humanities Computing*, <<http://www.uni-tuebingen.de/cgi-bin/abs/abs?propid=93>>.
- 12 See *Hughes@100*, produced by MITH and the David C. Driskell Center, 9 February 2002. Digital video clips available: <<http://www.mith2.umd.edu/hughes>> (spring 2002).
- 13 See *Dark Passage: A Chronology of the TransAtlantic Slave Trade*, produced by MITH for the Driskell Center, Flash design by Thomas Stanley, <<http://www.driskellcenter.umd.edu/slavery>> (spring 2002).

- 14 See Martha Nell Smith, with Laura Lauth, eds., *Titanic Operas, Folio One: A Poets' Corner of Responses to Dickinson's Legacy*, 1998, <<http://jefferson.village.virginia.edu/dickinson/titanic>>.
- 15 Emily Dickinson, Letter 470, *The Letters of Emily Dickinson*, ed. Thomas H. Johnson, 3 vols. (Cambridge, Mass.: Belknap Press of Harvard Univ. Press, 1958).
- 16 Lawrence Lessig's review of the original intent of copyright to protect the intellectual commonwealth is worth reflecting upon when considering how to foster the most effective collaborations: "If there were no copyright laws, unscrupulous publishers would simply copy popular works and sell them at a low price, paying no royalties to the author. But just as importantly, the framers and later jurists concluded that creativity depends on the use, criticism, supplementation, and consideration of previous works. Therefore, they argued, authors should enjoy this monopoly just long enough to provide an incentive to create more, but the work should live afterward in the 'public domain,' as common property of the reading public" ("Copyright and American Culture," *The Future of Ideas: The Fate of the Commons in a Connected World* [New York: Random House, 2000], 21). Thus copyright was not conceived as simply property right, as a matter of who owns intellectual material; rather, any temporary individual monopoly was seen as an incentive for subsequent creation by others, for generating new ideas and works. In recent years, the emphasis has veered toward protecting individual claims rather than fostering the collective good.
- 17 See David Damrosch, "The Mirror and the Window: Reflections on Anthology Construction," *Pedagogy* 1.1 (2001): 207-14; see also Damrosch, in collaboration with Vic d'Ohr Addams, Martha Doddvic, and Dov Midrash, *Meetings of the Mind* (Princeton, N.J.: Princeton Univ. Press, 2000).
- 18 Dickinson, poem 466, *Poems of Emily Dickinson*, ed. Franklin.
- 19 Linda Hutcheon, "Presidential Voices 2000: She Do the President in Different Voices," *PMLA* 116 (May 2001): 524-25.
- 20 Lucy Suchman, "Located Accountabilities in Technology Production," Published by the Department of Sociology, Lancaster University; <<http://www.comp.lancs.ac.uk/sociology/soc039ls.html>> (fall 2001).
- 21 Barton Levi St. Armand discusses Austin Dickinson's art collection and mentions the works purchased or especially prized by Susan Dickinson. Her name is penciled on the back of *Sunset with Cows* (see *Emily Dickinson and Her Culture: The Soul's Society* [Cambridge, Eng.: Cambridge Univ. Press, 1984], 251, 260, 282). See also my biographical sketch, "Dickinson, Susan Huntington Gilbert (1830-1913)," in *An Emily Dickinson Encyclopedia*, ed. Jane Eberwein (Westport, Conn.: Greenwood, 1998), 78-82.
- 22 Lara Vetter, general editor, *Dickinson Electronic Archives*, e-mail to the

author, 23 February 2000. I should also point out here that one problem was my knowing too much; that is, my awareness of Susan Dickinson's special affinity for the painting made me unable to read the words I had painstakingly transcribed differently once I interpreted the poem as an artistic response to work in another medium.

- 23 Suchman, "Located Accountabilities."
- 24 Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 2d ed., enlarged (Chicago: Univ. of Chicago Press, 1970), 1-3.
- 25 Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts*, 2d ed. (1979; Princeton, N.J.: Princeton Univ. Press, 1986), 259 n.
- 26 N. Katherine Hayles, introduction to *Chaos and Order: Complex Dynamics in Literature and Science*, ed. Hayles (Chicago: Univ. of Chicago Press, 1991), 1. Hayles extends some of her early observations and analyzes many of the challenges and opportunities in the digital age in *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: Univ. of Chicago Press, 1999).
- 27 Martha Nell Smith, *Rowing in Eden: Rereading Emily Dickinson* (Austin: Univ. of Texas Press, 1992), 94.
- 28 Siva Vaidhyanathan, *Copyrights and Copywrongs: The Rise of Intellectual Property and How It Threatens Creativity* (New York: New York Univ. Press, 2001), 8, 184.
- 29 The humanities professions would surely benefit from establishing an e-print archive such as those based on activities supported by the U.S. National Science Foundation, Cornell University, and the Los Alamos National Laboratory. Papers are posted on these Web sites for open critical review before they are published in peer-reviewed journals, which counts as a kind of publication, and also broadens the vetting process (see *e-Print Archive*, U.S. National Science Foundation with Cornell University, <<http://arXiv.org/>> [spring 2002]; and *e-Print Archive mirror*, Los Alamos National Laboratory, <<http://xxx.lanl.gov/>> [spring 2002]).