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## Chapter 2

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# Chip Off the Old Board

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Writing of his great autobiographical poem then in progress, William Wordsworth remarked it “a thing unprecedented in literary history that a man should talk so much about himself” (cited in Lindenberger, 1966, p. 11). Only this novelty of writing about some events that have led to my involvement with digital technology relieves this desultory student of *The Prelude* of embarrassment at the citation. Against the presumption of that quotation, the reader can take solace in the opinion of Wordsworth’s co-creator, Samuel Taylor Coleridge, who related that he had “never yet read even a Methodist’s ‘Experience’ in the Gospel Magazine without receiving instruction & amusement” (letter to Thomas Poole, 6 Feb. 1797). Not pretending intentionally to the latter, this account of one experience may perhaps tender a mite for the former. It may serve at least to inform some wondering colleagues how little, in fact, my present interests result from a self-reinvention they imagine, and how much my involvement with reforming the English major might have happened by accident.

### DATA

One chilly evening in late autumn of 1964, I entered the reference hall of the Main Branch of the Washington, DC Public Library and registered for the first time the shock of the sublime in the guise of a card catalogue of impressive extent. Although habituated to the vast by numerous transcontinental and some gale-lashed Atlantic crossings, four years next to the Rhine River, and memorable visits to the stark Oregon coast, these rows on rows of cabinets presented a new category. I was fourteen, and engaged reluctantly for some allowance money to transcribe onto index cards, three inches by five, bibliographic information that my father wanted for his dissertation. The seemingly exponentially greater number of card trays than I

ever encountered before interrupted even adolescent self-preoccupation, an effect heightened by the task of numbering numbing details of publication for a stack of economics titles that might relate to the topic, "AID—the problem of definition." Although not then perceived, the lasting inscription of that and later evenings concerned the sheer magnitude of published information regarding things about which I knew nothing, the existence of *data*.

This sublime encounter was prepared by innumerable minute antecedents dating from before a particular mid-1949 genetic recombination involving two trained statisticians, with whatever innate predisposition toward abstract, numerically accessible patterning their career successes reflected (to quote in its entirety the definition of *computer* in the *Oxford English Dictionary* at that time: "One who computes; a calculator, reckoner; *spec.* a person employed to make calculations in an observatory, in surveying, etc."). It seems to me now that, in very different ways, the world of number offered each of my parents a kind of refuge from distinct but equally stressful emotional cauldrons of only childhood or of an independence that had my father at age seven rounding up cattle on the open range. As an only child and daughter, the Nelsons' offspring, however, engaged more in the world of words than her future Hilton mate and believed in them to a much greater extent than he in relating to the first Nelson grandson, his sister of fourteen months subsequent and a brother seven years on. Words were the form of symbolic, abstracted communication best suited for those miniature adults. So the fact of this writing owes perhaps more to her, as the subject does to him.

Mirroring maternal belief and disinclined to mathematics save for the concrete visualizations of geometry, I imagined words as the royal road to truth and mastery, notwithstanding inchoate contra-indications of occasional emotional rupture. In the midst of anxious premonitions came the visceral satisfaction of rock music's hybrid articulations, amplifying words with physical power. The fall of 1966 brought me, fortuitously, to 821/B636zs2 in my branch library: a paperback whose spine, printed in designer Vincent Torre's dramatic black, yellow, and red, bore the riveting subtitle, *The Politics of Vision*. Politics being a recurrent theme for a family of federal government employees and vision a mysteriously vague but acceptable term that linked vestigial Unitarianism and the decade's and my own gathering psychedelic concerns, the phrase made for an arresting combination. This 1959 Vintage reprint of Mark Schorer's 1946 study of William Blake ranks as the book that most changed my life, not so much for its sophisticated literary-historical appreciation, then unrecognized by me and undeservedly still in the shadow of Northrop Frye's 1947 success, *Fearful Symmetry*, or for its too few but crucial eight black-and-white illustrations, but for the simple double whammy of the book's existence—signifying enough cultural capital to bear a paperback reprint after a decade and disclosing a mind set out through its quotations with the sledge-hammer force of revelation: "I must Create a System or be enslav'd by another Man's."

## UNIVERSAL CODE

From the beginning of the following school year, I recall the curiosity of speaking briefly by phone to my father, who was in Tokyo. He had just left the Foreign Service to become a professor of Social Science and Economics at a not-distant Penn State regional campus and was attending a conference on documentation to deliver his thoughts on "Information Systems and Copyright—an International Solution." The topic had come of increasing interest to him as he finished his dissertation in the preceding years. He had often used his stack privilege at the Library of Congress to follow up citations in Schumpeter's *History of Economic Analysis*, but a success rate of only about 50% led him to wonder whether there might be some more efficient way of accessing and archiving information. With regard to the latter, he was very taken with the then-impressive possibilities of microfiche. Just before leaving the State Department, he arranged to have the five-foot stack of paper documentation for an international conference on "Water for Peace" made available to participants on fiche. Later he would have nautical charts put on fiche to outfit perhaps the world's only microfiche reader-equipped ocean-going, twin-keeled ketch. His initial thoughts on access that same summer took the form of a paper entitled "A Code for the Unique Identification of Recorded Knowledge and Information."

This paper and the version presented a few months later in Tokyo represent the first announcement of an idea that, under the rubric of Hilton Universal Code (HUC), became somewhat of an obsession and that continues today, more than 35 years later. The chief concern of Howard Judd Hilton (Jr.) in that discussion was to formulate "an international solution permitting information systems to introduce whatever material may come to hand and in full text into information systems without necessity of time-consuming correspondence" (Hilton, 1967, p. 2). Anticipating the problem of what goes today under the term "micro-payments," he recognized that "[a]ny arrangement for compensating the author which requires writing, stamping, or manual operation...is apt to be so expensive in administration that the return to authors and publishers would be less than the cost of administration" (p. 3). Hence, he argued, "[t]he key to an efficient system for providing access to recorded knowledge and information and compensation to copyright holders is the identification of each work by a universally accepted code number composed of letters, digits, or a combination of both" (p. 3). He proceeded to outline a code for unique identification that could range in size from eight to 35 characters and identify twelve fields: (a) type of material; (b) source; (c) year and date by month and day or else year and edition; (d) form and availability of material from publisher or source; (e) unit identification number; (f) copyright status or security classification; (g) publisher or payee; (h) original language or language group; (i) translated language or language group; (j) status of material (revision, amendment, reprint, etc.); (k) identification of the list field (LC, UDC, Dewey,

Document Number, etc.), and (l) Subject classification of document number. He concluded by anticipating “the technological capability which may at some date in the future permit the storage of the world’s knowledge in a satellite to be called forth by any country on the globe on command” and the concomitant need for the creation of “a social institution,” which would enable the establishment of such an identification system and oversee “continuing payment for the use of material stored and made available through this medium” (p. 10). Although I was not to grasp this concern of my father’s for many years—certainly not in a phatic phone exchange as a seventeen-year-old with one 48—it was from then on a constant and steady breeze in our communications, even at 55 and 86.

## SILICON VALLEY

September of the following year, post-King/Kennedy/Czechoslovakia/Chicago, found me spending the night in the seedy San Francisco Trans-bay Terminal, waiting for the first bus that could take me to Santa Cruz and its three-year-old campus of the University of California (UCSC). That destination was overdetermined by the West Coast roots of my parents, the novelty of the campus and its goals, and its proximity to the intriguing aura created by “the San Francisco sound” like The Jefferson Airplane’s 1967 *After Bathing at Baxter’s* (“Love like a mountain spring, / Flashing through the rivers of my mind; / It’s what I feel for you; / Armadillo.[!]”). The bus turned out to be the local run, and from a trip that lasted hours I looked out on names that would in 1971 be grouped as “Silicon Valley”: Palo Alto, Mountain View, Sunnyvale, San Jose, and Cupertino. During my first quarter at UCSC, an inspired psychology teacher and practicing psychoanalyst (such as I then aspired to be) changed my intention to major in psychology with the succinct comment, “Why bother? It’s all in literature, after all.”

It was three years, however, before I encountered anything computer-ish, when I took an extracurricular and very brief—four sessions, maybe—introduction to programming. The language was FORTRAN, and the business was still done on Hollerith punch cards turned in for processing in a machine room. The class was taught by Dennie van Tassel, eleven years older than I and the first true geek I had ever encountered. I didn’t know it then, but he was shortly to publish a respected book, *Program Style, Design, Efficiency, Debugging, and Testing*; then a potpourri of tales, verse, limericks, and newspaper columns, *Computers, Computers, Computers*; and finally to be immortalized on *Google* as the author of the adage, “I’ve finally learned what ‘upward compatible’ means. It means we get to keep all our old mistakes.” In the class, we learned to write a simple program related to managing airplane seating allocation (so that’s what computers were for!), but most memorable was a class session when, having been asked about the hard disk, he led us into the *sancta sanctorum* of the machine room, lifted up the lid of a washing

machine-size box, and let us gaze on the whirling drum within. As it happened, when I returned to Santa Cruz in September 1972 to begin graduate school, the house some fellow students and I found to rent was owned by Dennie and Cynthia van Tassel, co-editors to-be of *The Complete Computer*. The ongoing background presence of Dennie and the computer center where I'd stop by to deliver the rent check was an important element.

### “MELTING APPARENT SURFACES”

In graduate school, I continued a kind of roll-your-own major that developed from an undergraduate thesis on Blake and my dabbling in Latin and Greek, in large part for exposure to counterculture icon Norman O. Brown. With an old-style British public education, Brown had a breath-taking memory and marvelous, Irish-eloquent ability to link the past and present. An archeologist of language and a great student of Joyce and Blake, Brown vibrated with energy of one eagerly awaiting and eager to assist the Apocalypse and the concomitant resolution to the conflicts that were his identity. One afternoon he stuck his head in an office temporarily assigned me and asked, “Have you noticed all the dissolution phenomena about?” Then he disappeared down the hall. Ten years and much such phenomena later, in Athens, I wondered whether he could have rocked to R.E.M.’s “It’s the End of the World as We Know it (And I feel fine).” His celebrated book, *Love’s Body* (1966), imprinted not only the relevance of Blake, but in its aphoristic style anticipated the form of hypertext lexias, as in the following complete example: “To bring this world to an end: the consummation devoutly to be wished, the final judgment” (p. 232). But most memorable in my graduate experience was 1976–1977, when a grant enabled me to work for nine months under the dome of the British Museum in the old Reading Room, with its shades of heroic research and a catalogue which dwarfed that of the DC Main Branch that had seemed so immense a dozen years before.

My undergraduate thesis and my dissertation were both built with the primary assistance of a single research tool that, through such prolonged use, deeply informed my imagination and did more than any other item to imprint the possibilities of computers for scholarship. This tool was the *Concordance to the Writings of William Blake* edited by David V. Erdman and published in 1967 as part of the “Cornell Concordances.” I acquired my copy in 1970 through the kind auspices of the owners of the Reprint Bookstore in Washington, where I was working over the summer and who let me take some of my salary in books special ordered at their discount. The concordance had been assembled with a room-size vacuum-tube computer, using 80-character key-punch cards—one card per line of text—and announced that fact with every line of its 2243 pages, all printed in ugly teletype block capitals that bespoke its origins as a printout on fanfold paper. Although I did

not then think of it, every usage checked, every association followed was a reminder of the power of digital technology to crunch through linear input and organize new patterns that reached through space and time: like Blake's acid, "melting apparent surfaces away, and displaying the infinite which was hid."

In April 1978, with my dissertation on Blake's "Revelation in the Litteral Expression" nearly complete, my father had the inspiration to invite and, more particularly, fund me to join him for a week in London, both to view the Tate's major Blake exhibition then in progress and assist him with a project in hand. My visits to the exhibition in the early hours included a chance meeting with curator, Martin Butlin, and at his suggestion I called up the Blake doyen Sir Geoffrey Keynes, who though in his 90s kindly invited my father and me out for tea at his Cambridge cottage overflowing with books. Learning that my father was an economist, he asked, in what remains the most memorable British understatement I have ever actually witnessed (the more so for my never having made the connection), "Perhaps you've heard of my brother, John Maynard?" Bloomsbury and the world that changed forever "on or about December 1910" were suddenly at hand (cf. Stansky).

## VIEWDATA

My father's attempt to change the world was now trying to link to the videotex revolution. Having read an article in the *Financial Times* concerning a British Post Office project called "Viewdata" (subsequently British Telecom and "Prestel"), he arranged a meeting with its chief engineer, Sam Fadida. Fadida's system, as described in his 1979 co-authored book, *Viewdata Revolution*, was a kind of premonition or premature anticipation of the World Wide Web—or "super mesh" as it might have been known had that revolution succeeded. It was, according to Fadida, "the first of the systems to enable the mass market to be offered the wide range of services inherent in the mix of computing and telecommunications; the first to bring the power of this combination directly to the general public" (p. 2). It accomplished this through a combination of specially equipped TV sets that could connect via telephone to databases made available as linked "frames or pages" on central computers (the IBM personal computer [PC] was still several years away). The goal was to make money for the telephone company in connection charges and storage rental; providers could set their own charge (or not) for their information. By today's standards, the system was terrible primitive—a frame offered only 24 lines of 40 characters in 16 colors and block graphics, and with all communication passing through electromechanical telephone switching a frame often loaded one line at a time. But Fadida knew that the system represented "a major new medium" whose capability for interactivity altered everything: "Viewdata could change the

relationship to information. It becomes like water: on tap” (p. 169). He also recognized that indexing was a major issue.

In the spring of 1978, still before the public launch of Prestel, Fadida was interested in getting businesses to set up pages for a sample experiment. Drawing on his sister-in-law’s professional connection to an ambitious newspaper company, my father got Hart Hanks Communications, Inc. to finance “HUC Access to Knowledge” as a page in Prestel. As a proof of concept, he proposed to index and mount about 500 abstracts from the Educational Resources Information Center (ERIC) with links so that if a viewer wanted a copy of the whole document a request would be forwarded to the British Library for processing (that was the “access to knowledge”). My job for a week was to key in some of these indexes, but what I remember is a windowless room with a bulky TV display and thinking that the information revolution was going to be a rather drab and pence-mongering affair. Hanks lost interest after a year, so my father didn’t move to San Antonio to work in their proximity; I went back to Santa Cruz and hired a typist for my dissertation at a dollar a page, including carbon copy and corrections; Prestel stumbled on even to 1994.

The fall of 1979 found me in Athens, Georgia, as the tenure-track replacement for a wonderful Blake and 18th-century scholar, Rodney Baine, then nearing the mandatory retirement at 65 (a law changed just after his retirement). With obviously many productive years in store (more than twenty, in fact), he was understandably somewhat bitter at the situation. In what seemed to me then a land-grant boot camp, I taught three courses in freshman composition the first quarter, then three more the second to have the third quarter and summer free. The virtue of this and the next year’s equally strenuous introduction to a different pedagogical world was to open my eyes to the insular provincialism of the left coast. Athens for me seemed at first a kind of time warp, although it was in fact already home to the B-52s and about to give birth to R.E.M.

In the fall of 1981, I was back in Santa Cruz on a visiting appointment for a quarter to help organize a conference proposed with my dissertation advisor. Searching for accommodation, I fell into sharing an apartment with a senior faculty member, a leading Dante scholar, recently divorced. I recall vividly overhearing at great length—from a bedroom whose balcony opened on to the rest of the space—this early computing humanist as he entertained a girlfriend with the process of dialing up the UC Berkeley library 70 miles away using an acoustic modem. I heard then for the first time the sounds of a modem wailing for its demon lover and recall vividly his glee at completing the 300-baud connection. The possibilities of dial-up access to the library offered good material for dreams to one who had expended many hours on that 140-mile round-trip. It was, for me then, Prestel made real. A few months later, back in Athens, I tried making that connection cross-continent myself with a hand-me-down desktop—the screen and keyboard

were molded together in one huge glob—and acoustic coupler. It only got as far as the handshake, but that was enough to make the possibility real.

## VIDEOTEX

On the basis of these few experiences, I agreed to take some of my father's notes and write up a short piece for a special report on videotex announced by the journal *ComputerWorld*. This appeared on March 29, 1982, under the rubric "Videotex—One Solution," and the headline, "Interface Standard Seen Key to Terminal Use." My father's thoughts had moved on to involve dedicated terminals to assist with the coding, so I developed the essay from that term to suggest that what videotex needed was a "*terminus ad quem*" or destination to strive for—a goal to be realized by "a common terminology," the absence of which was "the terminal problem for our time." The solution, I wrote at the time, required "a standardization of interface between the user and the machine," although I realize now that I meant not "the machine," but (impossibly) "the entire machine-mediated knowledge base or info-sphere." This "standardization of the interface," I went on to suggest, bringing in my father's concept, would "have as its foundation the unique identification of every item or document available for retrieval..." Given "[t]he potentially overwhelming ocean of information," such a unique and complex identifier would enable "a detailed indexing system that will utilize computer searching (or browsing) according to individual desire." With my father's assumption at the time that broadband broadcast would be the primary means of distribution, "index entries" would be a key means of enabling end-user programmed identification of interesting bits. Looking back today, it seems as if "Moore's Law" had yet to enter the equation, with the possibility of tremendous processing power to compensate for the front-loaded intelligence of indexing. The article, however, seems still valid in its suggestion that "we must realize that the capability least utilized by terminals at present, that of communicating and retrieving information by videotex, is that which promises the greatest development and benefit."

A little over a year later, I joined my father at the Sixth International Conference on Computers and the Humanities in Raleigh, North Carolina, to lead a small discussion on "Universal Access to Information: Impossible Necessity?" With the first sentence of the abstract, I tried to hook to the concerns of the meeting by continuing, "And if so, are not the conditions of its necessity, like those of its impossibility, essential concerns for studies in the humanities?" I argued then that "[u]niversal access to all recorded knowledge is now feasible," given the existence of broadband distribution, the possibility of terminals capable of selective retrieval of digital broadcast information, and, nodding to HUC, "a universal code for...unique identification." The final requirement of "getting it underway," however, had yet to be met. The first three aspects were then briefly reviewed, espe-

cially the fifteen-field, 61-character HUC identifier, which would enable, *inter alia*, “copyright accounting” and “detailed searching.” My attempted stirring conclusion declared that “[u]niversal access to information should be a right” and “great opportunity exists for the company with entrepreneurship and capital” to try and realize such access. But, babbling on in the vein of “information wants to be free,” perhaps it was too early to say, “Or are we now in a position to conceive that many will resist universal access? Do we face a long struggle to define and to institute that possibility? The issues at stake are serious and should become, at least, an object of discussion for the humanities.”

## UGA.EDU

At this point, I veered into deferred psychological, family, and professional concerns for a number of years, and luckily met Holly, who made the rest possible. I used an inherited and immensely heavy IBM PC for word processing and still have some of its twenty-year-old 5½-inch floppy disks. My University of Georgia email login was established in 1989. Computers continued to get cheaper, and in 1991, after deliberating mightily between a board with a 33mhz or 40mhz chip, I purchased my first computer principally to have email access from home via a modem connection. I remain grateful to Bert DeSimone—then a university network assistant, now its Administrative Director—who made a special trip off-campus to help set it up, and then another after we discovered the first modem didn’t work. With access then at work and at home, I began fully to grasp that networked computers were indeed going to be the Next Big Thing and, further, that if I wished to spend serious time in that arena, I would first have to get advancement to full professor out of the way. So when not learning from Holly, my son, or younger daughter, or dabbling with newsgroups, ftp, and “gopher,” I devoted two years to working up and placing a book-length collection of essays with the result that I was well situated to give attention to the “Mosaic” graphical Web browser and HTML when they arrived on the scene in fall of 1993 and exploded through 1994.

At the same time as my promotion was going forward in 1994, I received the first of several substantial grants from the University of Georgia, which were to constitute the indispensable financial support for practically everything I have done since with computers. The university has been so generous and encouraging that any efforts of mine to further its recognition as one of the world’s leading public institutions cannot do it justice. Mention also needs to be made of the lucky conjunction of faculty and staff at the university’s English Department. It is a truth never well enough recognized except by those in the midst how a few dedicated individuals can make a world of difference. In my case, those included Professor Hugh Ruppensburg as Head, an early adopter soon to be associate dean, and David Payne, a local PhD (Melville) who morphed into our sysadmin guru and prepared

the environment mentally and physically—to the extent of his wrestling thicket cable, long since abandoned, around Park Hall. Another name points to the fortuitousness of what happens: Edward Robinson was an MA instructor working with us for a year while tending an ailing father, a retired professor. A “wizard” from the MUD worlds—the more genteel MOOs not yet being common—he approached me a few weeks into fall quarter 1994 with the suggestion that we apply for a grant that would enable the acquisition of a server to host a literary-based MUD. I already had fantasies for some kind of Blake server, but must record here my thanks to Ed; without his prompt for a grant for “Advanced Textual Networking,” I would not, in July 1995, have found myself sitting in Park Hall at the keyboard of a \$15,000 Sun server baptized virtual.park.uga.edu—a genie only to be commanded in Unix.

## HYPertext

From my first awareness of servers, my thought was to make Blake available online in general and, in particular, a version of *Songs of Innocence and of Experience*, which would make use of hyperlinks to instantiate the many distinct orderings Blake offered in different copies. Typographic and even facsimile editions of that text were invariably offered in the particular sequence Blake had adopted shortly before his death, and the many alternative orderings, when acknowledged at all, were relegated to cryptic strings of plate numbers whose laborious decoding defeated the impact they carried. With hyperlinks it would be easy to make a kind of meta-text, in which from any plate the viewer could have links to every plate that ever followed it, identified by copy. As I had for an earlier project graciously supported by the University of Georgia acquired photographs of a black-and-white version of the *Songs*, I realized that I could scan those at a manageable file size—a necessary condition for modem connections at 2400 baud. At the outset, I also wanted to create an electronic version of David V. Erdman’s *Complete Poetry and Prose of William Blake*, the MLA-approved edition of the work and the obvious concomitant, an interactive concordance to that work. On March 22, 1995, I was able to report to the (long-since defunct) Blake newsgroup ALBION that David V. and Virginia Erdman, the copyright holders, had given permission to make the edition available electronically. A month later, I had created my first Web page for the Blake Digital Text Project and posted a description of a fall graduate class on Blake, which would focus on creating annotations and bibliographies for the *Songs*.

My turn to the digital world was assisted greatly by an academic structure that enabled me to teach, at about the same time, an undergraduate class on “Hypertext” (early 1995) and a graduate seminar entitled more grandly, “Cyborgs Doing Hypertext” (fall 1995). “Learn by teaching” can be as effective as “by doing” and

perhaps scarier. The advertisement for the classes cited Derrida's argument that "an entire epoch of so-called literature...cannot survive a certain technological regime of telecommunications...Neither can philosophy, or psychoanalysis. Or love letters," and added to that list, following Landow's (1994) *Hyper/Text/Theory*, literary criticism and theory. The classes were for me, even more than the students, a way to understand significant aspects of the attention devoted to literary theory in the 1970s and 1980s, which had so preoccupied graduate students then as a response to the initial shock waves of computer-mediated communication. The computer was well on the way to making a new kind of writing space, one that would reformat our sense of such traditional concepts as text, narrative, literacy, research, authorship, publication, and teaching. To paraphrase Blake, the text-technology altering, alters all. The graduate course had a newsgroup associated with it, uga.eng.645, which early on received this posting from outside: "Imagine the peace that washed over my tortured soul when I *finally* realized that this was an *english* newsgroup, and not an *engineering* newsgroup!!!" "Eng." evidently was going to be as increasingly problematic an abbreviation as its principle concern and suffix, "comp."

By fall of 1995, I had created what seemed a largish site, with over 50 main directories—one for each plate of *Songs*—some of which had nearly 100 files. Hand coded in HTML, the scale was getting unmanageable. Fate again presented an untrammelled fresh spirit in the form of Patrick Darden, a new MA student who was assigned part-time to offer research assistance. Fluent in Perl, Patrick wrote a script that enabled global revision of files in the site by the substitution of regular expressions as specified. Boswell (1969) relates the story of his hearing, on a visit to the first steam-engine factory, co-founder Matthew Boulton's declaration, "I sell here, Sir, what all the world desires to have—POWER" (p. 704). Perhaps his response anticipated mine at seeing how easy, useful, and powerful a few lines of Perl could be. Primed by the summer's work with basic Unix commands, I was astonished at what this student half my age could accomplish with a few keystrokes. Want to change instantly the background of 1,000+ Web pages from white to black? ~s#(bgcolor=\#)(ffffff)#\$1000000#! It would now all be yet more easily done with style sheets, but in September 1995, it seemed about the coolest thing going.

## HUMANITIES COMPUTING

It was this experience more than anything that led me to apply in late 1995 to the university's wonderful grant program for "Study in a Second Discipline," with a proposal to spend a year taking classes in computer science whose opening conceit turned on the then-popular idiom to "get with the program!" With the approval of this proposal, I became the first faculty member from English to participate in the

program. My first discipline of literature (as specified by doctoral diploma) presupposed study of *litera* or letters (Lt.), which, via the Greek translation, *gramma*, makes a practitioner of that discipline literally pro-gramma. But to what program did that commit one in the December 1995 predawn of the 21<sup>st</sup> century? My response was to point to the emergence of programming as “a form of writing, apparently never intended as a communicative substitute for speech” (Warner, 1994, p. 44). The proposal offered a substantial outline of fifteen CS courses to be audited. Although I was hardly able to accomplish all that was proposed, the opportunity to learn the programming language C, study database organization and discrete structures was profoundly rewarding. What I remember most (or, now, remember remembering) is the concept of pointers in C, and the idea that one would code an operation to take advantage of its indirect or side effect—this seems to me still a concept rhetoricians have yet to formulate adequately. Another invaluable aspect of the experience was simply being able to observe at length students with different values and intellectual orientations than those of English majors. It seemed to confirm a growing suspicion that great concern for words was often symptomatic of some attempt at self-therapy.

On the strength of this year-long study and with the assistance of the department’s recently hired academic professional, David Gants from the University of Virginia E-text Center, I set out a graduate course in “Humanities Computing,” although with the less discordant title of “Literary Computing.” Having been drafted into administration to serve as the department’s graduate coordinator, I could arrange the course with little trouble. Of the thirteen items in the original proposal, only one (No. 11) shows real age, although the thing as a whole shows what might be characterized as “first-generation East-Coast concern with mark-up”:

1. *Unix*. An introduction to the operating environment for the department’s servers; its nearly 30 years history; its “philosophy”; utilities; account management; Linux: unix for the desktop.
2. *Emacs*. The versatile, multifeatured text editors for Unix.
3. *Perl*. The powerful yet accessible language of choice for text manipulation in Unix; a brief review of programming fundamentals (arrays, conditional statements, loops) and the reason for preferring Perl.
4. *Regular expressions*. The art and science of formulating algorithms to search and query strings of characters in ways adequate to the variation and complexity of literary text.
5. *Optical character recognition*. Capturing text with a scanner and OCR software.
6. *Mark-up*. The art and science of making texts useful for computer manipulation by indicating or “tagging”—marking up—aspects to be studied (an endeavor that connects directly with the rich history of editorial theory).

The guidelines of the Text-Encoding Initiative (TEI) are the principal concern here, including their application in the following:

7. *Large-text databases*. A consideration of the Chadwyck-Healey and other literary databases; the linguistic atlas (UGA); other concordancing programs (TACT, WordCruncher).
8. *MOOs*. The composition of interactive, text-based environments; especially “bots”—primitive programs that interact on the basis of text expressions.
9. *Hypertext*. A historical and theoretical consideration of the concept that embodies the new literary experience wrought by computer-enabled communication.
10. *Image editing*. Basic techniques in “Photoshop,” with particular attention to the optimization of images for use over the Web.
11. *PowerPoint*. The widely used electronic slide-show presentation device.
12. *Web design*. The authoring of Web pages using “extensible mark-up language” (XML) and Web scripting such as Perl-CGI and JavaScript; Web site editing programs; an overview of the university-supported Web environment, WebCT.
13. *Multimedia*. Basic audio and video capture and editing.

As of 2005, the course had gone through seven iterations and, with the designation and hiring of an assistant professor in Humanities Computing (Stephen Ramsey) was also offered in an undergraduate version.

## ENGCOMP

Having been the only one to put in for the position, in 2001 I became the head of our department. In a letter of candidacy, I cited Duke’s English professor-turned-administrator Cathy Davidson that “[a]ny English department that can present itself as one of the university’s most forward-looking, concerned, and indeed, inspired sites of learning in the midst of the information age has already won half the battle” (*Profession 2000*, p. 100). My particular goal of instantiating the multiple dimensions of “engcomp” has taken the form of an attempt to integrate mark-up with first-year writing. Needless to say, such an endeavor would be hopeless but for the enthusiastic and visionary participation of our director of first-year composition, Professor Christy Desmet, the ongoing assistance of our Thoreau-inspired instructor who sidelines as a brilliant and tireless systems and database architect, Ron Balthazor, and grant funding from the university to hire (through another lucky connection) high-end programming expertise.

Whether it is, as far as concerns humanities computing, “for this I have come” remains to be seen. But if my father’s dream of a universal code for the

identification of all recorded information continues to be beset with structural and logistical difficulties, the realization of a code and application for the markup and identification of student compositions within a university does not seem unreasonable. The “Electronic Markup and Management Application” (<emma>— [www.emmalogin.org](http://www.emmalogin.org)) is now well underway, with its intention to “revise the way in which students write, edit, and submit compositions for review, as well as the way in which instructors and peers can respond by using markup technology to enable Web-based collection, modification, distribution and archiving of student work.” The new writing *techné* it envisions would provide the groundwork for a wide-scale reevaluation of the composition process and in so doing affect all major coursework. In a development that could have implications across the discipline nationally, the English major could be reformed as students and faculty see digitally composed and marked-up assignments as part of a larger whole to which they now have instant access. Students will develop and have archived comprehensive individual writing portfolios as they move through the program and, at the same time, contribute to the ongoing archive/database available for a variety of collective and collaborative pedagogical purposes as well as individual and program-wide evaluation.

## LESSONS LEARNED

Any reader who has persisted thus far can probably last through these concluding recommendations for new professionals entering this nascent arena:

- Learn at least one programming language (Perl, Java, Python, Ruby, C++).
- Learn a markup language—XML, obviously, and some XSL.
- Teach with self-developed Web materials.
- Use open source to every extent possible.
- Read Edward Tufte and Elizabeth Eisenstein for starters.
- Join the Association for Computers and the Humanities.