HISTORICAL COMPUTING
LOOKING FORWARD TO 2001 FROM 1989

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> It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair, we had everything before us, we had nothing before us, we were all going direct to Heaven, we were all going direct the other way--in short, the period was so far like the present period, that some of its noisiest authorities insisted on its being received, for good or for evil, in the superlative degree of comparison only.[1]

Our own era, with its disjunctures and evident continuities, unprecedented power and muscle-bound weakness, and its chaotic technology, evidences a similar spirit. So too does the past decade of computing. Unlike the earlier revolutionary ferment, however, computer-assisted instruction in history seems certain to advance slowly and not provoke a neo-Luddite counter-strike, though the notion has stirred within some a desire to defend the purity of history against those who would profane it. The accumulated result of this development, seen at a distance of years, may well have helped to unlock the mysteries and joys of the past for a new generation.

Today many historians want to know how much (or, more commonly, how little) they need to know about computers. Is this simply another soon-to-fail technology, like programmed learning, or is it a watershed that will divide old-school fuddy-duddies from latter-day young Turks who will ultimately occupy the power seats of academe? Because this question is implicit in much that is written about computer-assisted instruction in history, I want to try to answer it as clearly and as fully as I am able, so that I can anticipate--fanfare of trumpets, building crescendo of drums--the HISTORIAN OF 2001. To do so I will first look briefly at today's situation and then plunge ahead with my forecast for the next dozen years.

Are we having fun yet?

Certainly, many historians are not enjoying the thought of learning new computer skills. They perceive this task as akin to taking another historical methods course. It will consume much precious time, require a lot of busywork, force memorization of arcane terms and conventions, and carry with it no guarantee of success because the generic nature of the new mastery does not ensure discovery of a dazzling research topic, good fortune in the job search, or acquisition of tenure and promotion. Further, mindful of earlier techno-bubbles, many historians remain justly wary of wondrous claims for technological breakthroughs.

Actually computers do offer some important advantages. Historians lacking organization will find this new technology helpful. Disks typically do not blend with the background as successfully as do papers and manila folders. Computerized outliners, desktop accessories, and project managers can increase productivity.

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[1]Charles Dickens, *A Tale of Two Cities* (New York: American Library, 1980), 13.

Computerized search functions will sort expeditiously and uncomplainingly through disks or text for misplaced files or half-remembered phrases from a work in progress. Whether writing an article, lecture notes, or a lesson plan, the computer can provide much-needed assistance. The ability to move a few words or pages of copy within a document or transport it to another disk by means of a keystroke or two saves time and facilitates cobbling together coherent remarks from jottings done at odd moments, a marked improvement over scribbled comments paperclipped together. The same features hasten transformation of primary-source notes into a first draft and revisions into a finished essay. Research that before now depended largely on the doer's memory to keep facts straight and find appropriate mental niches for the disparate pieces of the historical puzzle turned up over time and in various remote evidentiary materials can now employ powerful new tools in databases, spreadsheets, statistical packages, and even in word processors to remember and de-eclectify the process of bringing sense from disorder. Even memory itself has been improved; instead of residing only in the brain, information now can be stored on semi-permanent floppy or hard disks and recalled to life in an instant. Though but a few of the new technology's pluses, these uses mean that hard-nosed historians whose only interests are the next book and moving up a corporate ladder of academe will find the time well spent learning computeristics. And even that chore has been exaggerated. Compared to the weeks required to train the fingers and mind to touch-type, only a day or two should suffice to learn the basics of even the most sophisticated word processor.

Teachers and Researchers: and (N)ever the twain shall meet?

Is there any difference? In their needs, perhaps so, but not so markedly that computer-aware historians need preclude themselves from acquiring any type of software or item of hardware. Any teacher of history and any researcher of the past will find computers a way to bridge this chasm-cum-puddle-jump. Truth may be perceived in many ways and communicated in as many more. Teachers and researchers are more alike in their purposes than either imagines.

SOFTWARE

Today's non-computerized historian should answer several questions:
1) Do you compose at the typewriter? Do you find it difficult to recopy your work without making changes small and large in the text? Is this a creative interaction between brain and machine?

If so, you should certainly investigate word processing software. Not only does the computer speed up editorial changes--you can easily move around blocks of prose, delete whole sections, insert new wording or new paragraphs wherever you please--you need not proofread copy already checked for it remains as you first typed it. Because you can print a hardcopy in a trice, you can have a clean copy of work-in-progress at any time you wish, a marked improvement for those who put off typing another draft until the original disintegrates with scissored rearrangements and penned rewordings.

Do you need a top-of-the-line, feature-laden word processor? Recall your last significant writing project. How many alterations did you make between the first

draft and the finished product? If all you did was rearrange some parts of the manuscript and rephrase 10-15% of the copy, you probably need only consider the inexpensive (about $100) versions. If you restructured the text drastically, renumbered the endnotes time and again, and included tables or graphs, among other more sophisticated activities, you should probably consider either integrated software (a word processor combined with spreadsheet, database, and possibly graphics, e.g. *AppleWorks* or *Framework*) or a heavyweight word processor (e.g. *WordPerfect* or *Nota Bene*).[2]

2) Does balancing your checkbook stretch your numeracy to the limit? Do you investigate financial records or work with GNP, the federal budget, and the national debt, with crashes, panics, and depressions, with banks, businesses, and money? Do your research or teaching interests lead you to manipulate such figures, to play out what-if scenarios with the facts?

If you do, you are likely already to have investigated a computerized spreadsheet. Much of corporate America has already committed itself to *Lotus 1-2-3* or one of the other whiz-bangs of the workaday world. Yet these, too, come in entry-level versions (again, part of the integrated package referred to above or in stand-alone products costing less than $100) and multi-featured, multi-layered, multi-buck spreadsheets (*Quattro* and *Lucid 3-D* are other entries in this category) and statistical packages (*SSPC/PC+* leads the rest).[3]

3) Do you engage in large projects involving names and numbers or in folders full of correspondence leading to many small and some sizeable writing assignments? Have you developed a highly structured pattern for the entry of evidence on note cards? Do you find yourself going back through the same material searching for new ways to combine the parts to explain the whole?

If this seems to characterize your research activities, you are probably a candidate for database management software. Those hunting in one vast preserve of evidence or looking for similar targets of opportunity in many areas can use a database to enter and sort large quantities of verbal and numerical data. As has been the case with previously discussed software, there are databases for those with little money and small projects (again an integrated program might be in order or one costing less than $100, such as *PC File+*) or those with a grand design who would be satisfied with nothing less than the best (*dBASE III Plus*, the benchmark

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[2]The software mentioned in this paragraph comes from the following companies: *AppleWorks*, Claris Corporation, 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052; *Framework*, Ashton-Tate Corp., 20101 Hamilton, Torrance, CA 90502; *WordPerfect*, WordPerfect Corporation, 1555 N. Technology Way, Orem, Utah 84057; and *Nota Bene*, Dragonfly Software, 285 W. Broadway, Suite 500, New York City, NY 10013.

[3]*Lotus 1-2-3*, Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02412; *Quattro*, Borland International, 4585 Scotts Valley Drive, Scotts Valley, CA 95066; *Lucid 3-D*, PCSG, 4540 Beltway Drive, Dallas, TX 75244; *SPSS/PC+*, SPSS Incorporated, 444 North Michigan Avenue, Chicago, IL 60611.

program or this type, or one of its many competitors, *Paradox* and *Omnis Quartz*, for instance).[4]

4) Do you look for ways to communicate the past in visual images or in ways that involve the recipient more immediately and more actively than the printed page can accomplish? Do you use overhead transparencies, slides, videotapes, maps, or recorded speech? Do you strive for a you-are-there approach? Do you wish to emulate Garrison Keillor (albeit a factually accurate one) in creating a whole society of living people out of a few well-chosen vignettes and telling details?

If you do, you are a candidate for state-of-the-art presentation software, for programs creating computer simulations, or for both. In the former instance some of the upper-echelon word processors will mix text and graphics in an acceptable fashion, but there are more specialized programs (e.g. *PowerPoint* and *More II*) developed for the boardroom but equally suited to the classroom or convention-hotel conference room.[5] When the look of the presentation and imagery--cartoons, drawings, graphs, maps, video clips, and the like--are of prime importance, then you should investigate this type of software.

Should you hope, rather, to fashion an interactive tutorial or time-travel the viewer through words, music, and images to a particular place and time, you should consider simulation software. Inexpensive products (such as *Simulation Construction Kit*) will permit you to combine words and drawings on a limited number of screens, establish several paths through the material, perform simple computations to tally a score or keep track of numerical variables, and recognize limited verbal input by the viewer. The high-end programs (e.g. *Course Builder*) will let you go beyond these to create larger presentations, more sophisticated branching and calculations, integrate videotapes and sound recordings, introduce animated graphics and synthesized speech, and time the user's actions in working with the simulation/tutorial.[6]

If, instead, you seek absolute control over the outcome and wish only to mix text and simple graphics, you should consider programming in BASIC, an inexpensive, somewhat time-consuming, but not terribly difficult alternative. The outcome will easily match that of the low-end simulation programs.

Finally, of course, all you might wish is to tap the genius of others who have created simulations of battles or critical developments in the past. You will discover an ever-increasing supply reaching the market. But in this you are necessarily passive. You will have to be satisfied with what exists. If you have a better idea or a new departure, you should look into the software mentioned above.

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[4]*PC File+*, Buttonware, P.O. Box 5786, Bellevue, WA 98006; *dBASE III Plus*, Ashton-Tate Corporation, 20101 Hamilton Avenue, Torrance, CA 90502; *Paradox*, Ansa Software, 1301 Shoreway Road, Belmont, CA 94002; *Omnis Quartz*, Blythe Software, 2929 Campus Drive, San Mateo, CA 94403.

[5]*Powerpoint*, Microsoft Corp., 16011 N.E. 36th Way, Redmond, WA 98073; *More II*, Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014.

[6]*Simulation Construction Kit*, Hartley Courseware, 133 Bridge Street, Dimondale, MI 48821; *Course Builder*, TeleRobotics International, 8410 Oak Ridge Highway, Knoxville, TN 37931.

With regard to the software of tomorrow, I will develop the same four general categories, but I must enter this caveat. You need not become familiar with all of these capabilities, only with that or those that apply directly to the task(s) already identified as your interests within the profession.[7] Yet we all change, our interests evolve or make great leaps forward. Sometimes the inessential of today will prove the must-have of tomorrow.

What follows is a forecast of the future, not a prediction. Futurists deal with probabilities, with likelihood, not with certainty. A French futurist asserted that if he could know what the world of 2001 would be like, know without doubt what would be, that would interest him no more than knowing what 1001 was like, because what he wanted to do was to influence his times, help shape the time to come. Historians can appreciate this distinction, perhaps in an even more elemental way: If we could know what the year 1001 was like, we'd all be out of business. Fortunately, not even the people of 1001 knew what it all meant any more than those of 1989 can with assurance explain what happened in the last presidential election. That sense of the past or the future shaped by the human mind is an attractive notion, and those who read these words should understand that I am committed to bringing about certain outcomes with regard to computer-assisted education in history. While I will try to restrict the impact of my bias, I cannot and would not remove my hopes and ambitions from at least some influence over the proposals that follow.

Word Processing

Virtually every historian by 2001 will use a word processor. Perhaps a few curmudgeonly grumps will refrain, but most will from graduate school, if not from their undergraduate days, have gotten to know the ins and outs of a word processor (or, more likely, several word processors as the bachelor's degree institution preferred one computer and brand of word processor software, the graduate institution another), much as soldiers learn the vagaries of an M-something rifle, and they will fondly recall the baby-talk commands of their first word processor.

Will there be two levels of word processors then: the full-featured, rip-snortin' thoroughbred and the tame, one-trick pony model for beginners? The present top-this-if-you-can mentality of the software companies producing the

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[7]The following publications will help you to stay current with software developments. *History Microcomputer Review*, a twice-yearly publication reached by addressing me at the Department of History, Pittsburg State University, Pittsburg, KS 66762. The retitled *Social Science Computer Review*, Duke University Press, Box 6697 College Station, Durham, NC 27708, carries professional reviews of products as well as a few articles on historical computing. Other periodicals, such as *Academic Computing, Collegiate Microcomputer, Social Education*, the *OAH Newsletter*, and *Simulation & Games*, occasionally contain material relevant to this subject. For book-length discussions see Howard Budin, Diane S. Kendall, and James Lengel, *Using Computers in the Social Studies* (New York: Teachers College Press, 1986), George M. Kren and George Christakes, *Scholars and Personal Computers* (New York: Human Sciences Press, 1988), and Bryan Pfaffenberger, *The Scholar's Personal Computing Handbook: A Practical Guide* (Boston: Little, Brown, 1986). James B. M. Schick, *Teaching History With A Computer* (tentative title), forthcoming from Lyceum, will discuss dozens of different ways to use today's software with college history students.

expensive word processors ($300+ list price) must reach some level beyond which even they cannot aspire. Since this plateau has not yet been reached, speculation is rather difficult, but I would anticipate the gap between these two to diminish significantly. In part this will be because there must be some limit on what one can do with a printed page and in part because the advances in memory size will enable the smallest machines of 2001 to run the biggest word processing programs. Telecommunications and hypertext applications may also expand customary ways of transmitting the past to include publications that exist less as hardcopy than as images on a computer screen.

But, having said this, I expect entrepreneurs jockeying to get market share to begin to configure the software to particular audiences. Historians being different from mathematicians, musicians, artists, and others in the academic world, I would imagine firms will try to tap into particular segments of the market by offering versions of their software with a few more features to appeal to a specific interest group, but with a lot of features in common. Like automatically putting notes into the *American Historical Review* or *Journal of American History* style or even into a format to which one of the other historical journals adheres. This is not much of a leap: *Nota Bene* will do much of this now. Perhaps these corporate merlins will include a note-taking mini-program for use with a laptop, translators to work with a scanner to turn a page of text (printed or handwritten) into a word processor file, and additional features useful to a specific discipline. But these will be come-ons, more useful than fins on a 50s automobile, but not needed by everyone.

If any type of software is the *sine qua non* of the profession, this is it. And your students will be writing essays on word processors and turning in their reviews, term papers, and even their examinations on disk. Students will take notes on small tablet-sized computers and will use the same machines to participate in classroom activities involving written or graphic work. Word processors will become ubiquitous.

Spreadsheets and Statistical Packages

Unless you are working on a business degree (will history become integral to a well-rounded MBA's course of study as indeed it should by 2001?--probably not), are in business, or intend to keep track of things monetary with a computerized spreadsheet, you will probably be able to avoid becoming familiar with *Lotus 1-2-3*, *SPSS/PC+* or even with barebones spreadsheets and statistical packages.

History teachers who work with economic or numerical information--census figures, perhaps, or population statistics, household accounts in the Age of Jackson, and the like--will see the need to become conversant with this type of software, but most historians probably will not by 2001.

Yet as the mid-to-late twentieth century looms larger in the study of American or world history, given the vast quantities of numerical data churned out by governments and agencies, more and more graduate students will come to work with these data so that the passage of another generation, historians of 2026, say, may well come to regard a spreadsheet or statistical package as one more tool of the trade. Social science methods should become more pervasive and not less so,

though the computer will provide ample opportunity for narrative history to flourish as well.

DATABASE MANAGEMENT SOFTWARE

Apart from researchers with very structured topics (lots of names, dates, short entries of data) or with very large text files (presidential papers, for instance, or war diaries from the armed conflict in Vietnam), most teachers of history will not be required by their situation to become familiar with a database program. Not that they or their students might not profit from that ability, but only that they will probably not by the year 2001 have to acquaint themselves with *dBASE*-whatever.

When the calendar rolls around to 2026, however, and again assuming the growing importance of studying the "early modern" (the once and never-again "golden age" or foundation for the "American century" stretching into the twenty-first century?) era of the 1950s-1980s and the evidence cramming ever-more warehouses in Washington, London, Paris, Moscow, Beijing, Tokyo, and the rest, historians of this later time may have no choice but to turn to a database manager to keep track of and search for facts and conclusions about this important time.

Simulations

Here is where I expect (and hope) the real growth of computer use to develop. When hooked up to videotape or a compact disk--a situation possible with today's technology, not tomorrow's--a computer has the ability to recreate a time and place that will transport the viewer's imagination easily into another environment. Studying the past can leave less to the mind's eye and provide more for the actual eye of the beholder, and the passage of another ten years, if as eventful as the decade just past, should bring many new wonders into being.

The romance of history is recreating a time--by taking it apart piece by piece, trying to figure out how it worked individually and collectively, and then reassembling it once more. Much of what history teachers do in their classes is, in effect, to take the students on a journey to some other time and place. A computer can perform a similar function. Today's presentation and simulation software can evoke a voice reading the text, display still or animated pictures, branch to screens of more information in response to input from the viewer, and move on until the end or at least to a conclusion. Done with or without the professor in attendance, the recreation can be repeated until mastery or at least familiarity has been achieved. This is not wishful thinking but today's actuality. Tomorrow's software will combine greater ease of use with more powerful tools to invoke the past.

And in conclusion, let me just say this about that . . . .

Most historians have not yet harnessed themselves to--or strapped themselves into--this new technology, but a lot of wonderful things could come of it. Then, again, some awful dreck could emanate, too. What becomes of this technology will turn on what historians do with it.

When I contemplate the power of computers to do what historians want to do and consider how few of them are actually doing it, I am distressed that graduate

schools, and those of us who have done some minor pioneering in this technology, have been so ineffective in convincing colleagues and students that we have in the computer a tool of immense imaginative power and vast potential for teaching good history and for facilitating research and publication. To answer the question posed at the beginning of this essay, I do not see the discipline at a crossroads. The profession will evolve, as it has significantly in this century and the last. By 2026 the present brouhaha may seem quaint, short-sighted, or simply absurd, but historians will go on, will continue to illuminate the past, and many, if not most, of them will do so by means of a computer.

The challenge is to make school history as interesting to this generation as it appears to have been to their parents. The computer represents only one tool among many that a secondary teacher or college professor can employ to bring the subject alive. As worshippers of Clio we know ourselves the sense of belonging a knowledge of the past can bring, the feeling of being connected to a long line of humans stretching back from little Lucy in east Africa to the present time and across the oceans to embrace all humankind. We also understand the rootlessness, the inability to comprehend direction or evaluate politicians and programs, and the irrelevance of all inputs for those who lack a grounding in history, in the warp and woof of a nation, a people, or a culture. The public is beginning to rediscover the uses of history,[8] but much work remains to be done. By 2026 at least, historians should be able to look back at the oft-voiced doubts of the late 60s and early 70s and the "lost generation" of the 70s and 80s[9] with a feeling of relief, but we must begin now to reach out to out constituency. Computers can help.

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[8]At least this is my view of the advent of books such as Richard E. Neustadt and Ernest R. May, *Thinking In Time: The Uses of History for Decision-Makers* (New York: Free Press, 1986); and Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Random House, 1987).

[9]My term for the time when academic standards for new school teachers dropped drastically, in part a result of the low public esteem for teaching, poor pay, and attractive opportunities in the private sector; when "career education" proponents openly called for the elimination of "irrelevant" history from the high-school curriculum; when the other disciplines grouped with history in the social studies began to elbow history aside for preeminence; and when the college job market shrank to virtually nothing. Compared with what has occurred in England and is now taking place elsewhere in Europe, young Americans have suffered far less and have much better prospects than do their counterparts. Nevertheless, this period, coinciding roughly with the armed conflict in Vietnam and the lost-sheep years that followed, was traumatic for society and a difficult time for historians as well. For the lack of a better date, I would put the end of the era as 1983, with the release of "The Nation At Risk" report and the public debate it fostered on the quality of education in this country. Since the government-induced recession brought a respite from the soaring, long-standing inflation and other Reagan policies initiated a period of economic growth and renewed national self-confidence, all at about this same time, 1968-1983 seems appropriate for the dates of this "lost generation" era.