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▲ Home

◀ Contents

### Visualizing History: Computer Technology and the Graphic Presentation of the Past

by Mark Moss, Ed..D.

#### Introduction

Alternative delivery mechanisms' also bring their benefits. While Luddites question all use of advanced technologies, conveniently forgetting that the Gutenberg press spawned print culture and revolutionized communication, it is questionable whether the new technologies will actually cause a sea change in the scholarly culture. Unless one has acquaintance with video-conferencing, the Internet, interactive CD-ROM technology and electronic mail, one has little qualification to speak, as some do, of the end of teaching and learning. The Internet for example is, as some faculty fear, filled with much frivolous diversion and indiscriminate information. But it also contains hard-to-find documents of the Carolingian period, rare commentaries of St. Basil and reports of recent breakthroughs in understanding atomic particles - and it hosts rich international roundtables on topics as diverse as Renaissance iconography and enzymes. There is among many faculty a great reluctance to experiment with the new technologies, a reluctance reinforced by institutional inertia, which, once moralized, results in stubborn resistance to new opportunities. (Emberly, 1996, p. 187)

Computer technology has impacted both the study and idea of history in a number of ways. The Internet has provided numerous web-sites for students to read, see and look into for historical information. Historians, both professional and public have also begun to utilize the computer in a variety of ways, both in academic terms as well as leisure formats. Computer software packages have reoriented the way history can be played with and presented. This in turn, can be divided into two arenas; the first are CD-ROMs which offer a unique view of history (Note 1). This also includes games that use history as a major point of departure and reference. The main example of this version is the Civilization series. The second main area is web sites that run the gamut from those maintained by academic institutions and governments to the plethora of sites designed by media outlets and heritage preservationists.

Most scholars who come from the disciplines of English, the Humanities, or Education, are not necessarily grand supporters of computer technology as a delivery for education. But, from Robert Logan to Clifford Stoll, there are those who see the computer as a tool which is valued for its potential and understood for its limitations. Others, such as Douglas Noble, view the computer either in the classroom or in virtually any pedagogic manner, as nothing more than

a form of marketing technology to school boards at great financial and human expense (Nobel, 1991). There are exceptions, like Lewis Perlman, who sees the computer as the panacea to all that ails education. The simple fact is, that the computer and its technological offspring can accentuate teaching but never replace the promise of a good teacher. Related to this is the fact that the embracement of on-line learning is only successful a fraction of the time with students who are self-motivated learners.

At this point, it must be recognized that the computer can't take the place of reality - of truly being in a different place or time. But, with some CD-ROMs and with some Web sites, it is the next best thing. No, it is not the same as going out and smelling the fauna in the forest, as Clifford Stoll has remarked, but it is convenient and feasible to look at a simulation in a classroom. And to a great extent, that is what the best computer technology can do: offer a view, a glimpse, and not the whole story. Like a movie or a photograph, it can supplement and round out. It can give the student a viewpoint to start or to accentuate what she has learned. The utilization of computer hypertext or hypermedia does not and should not take the place of the teacher in the lecture hall. "Multimedia," writes Paul Starr, "permits an extraordinary flexibility in conveying concepts - through words, pictures, and sounds, as something that can be built or played as well as read or watched " (Starr, p.53).

Technology has often been employed to enhance and accentuate traditional educational formats. With the coming of each new development, the technology of the day was touted as a way to supplement teaching. Yet, one consistent fact remains. As Larry Cuban has documented, everything from slides to projectors have been employed but inevitably, failed, overall, to reach the potential objectives first envisioned. Radio, television and film have had numerous impacts on education and on history in particular. If measured from the popular standpoint of history, they can be shown to have, as this whole work seeks to quantify a fair degree of success in conveying information about history to a fairly large audience. Regardless if is problematic or error-ridden, history can and has been transmitted to a significant audience by audio-visual media. What Cuban and others fail to recognize is that the issue is not that it is good or bad, but is a reality for young people in particular, and one that can't be ignored. Just as students may learn about history from fiction TV or a Spielberg film, they can learn from the CD-ROM or even the Internet. Once again, this is not to suggest that this is a case of one being inferior over another format but that young people today gravitate towards these formats in a way, that as Sherry Turkle implies, is natural. In essence, the history they access on the computer, is the way they are often exposed to history. There should be no debate about this (Note 2). It is a fact!

One need not cite studies that state that computer software has little impact on increasing historical or geographic knowledge (Wiebe & Martin, cited in Armstrong & Casement, 1998, pp 80-81). One could

in fact cite just as many studies and surveys claiming the opposite. And this is not to suggest that this is simply irrelevant, but for the scope of concern here, not the focus. One should be aware, that the non-linear, graphic-based world of computer images is not the same as the structure of the book, just as much as a film differs from a book. It is "going to jump all over" and the historical game is going to have inconsistencies in chronology and errors in information just as a book could contain. More serious concerns such as a lack of contextuality should be recognized as endemic to the computer and the Internet, but one must be cognizant of the fact that this is part and parcel of the computerized universe (Armstrong & Casement, pp 80-85).

As a further qualification to the above, some theorists draw a very key distinction between devices such as the projector, the VCR and the computer. In particular, the interactivity of the computer pushes it into a different category. If one subscribes to the notion that television watchers are "passive" or at least have a tendency to view in a more passive state, then one has to recognize that dealing with a web site, searching the Internet, or interacting with a CD-ROM involves much more activity and perhaps, more cognitive stimulation (Logan, p.168). If this is in fact the case, then if not more is going on, then at the minimum, something different is happening on a cognitive level. One researcher has stated that in writing and deciphering the printed/written word, one kind of information processing is occurring; "linear, sequential, analytic, specialized and logical." With electronic media, the kind of information-processing at work is "holistic or global, integrated, synthetic, generalist, and metaphorical" (Logan, p.169). Regardless of how it is sliced, something different is resulting.

Why are people still surprised that these offerings are different from what is contained in a book? is a question or perhaps the question that should be considered. Of course, the text or the story is going to be subservient to the visual. That is the pattern and that is the essential characteristic of the computer-mediated universe. Prolonged and omnipotent use of this technology may probably stilt the imagination and may affect reading and comprehension skills. The key, though, is to build upon this devotion and channel it towards more holistic approaches. One can bemoan the fact that students can't read as much as students did in the past and one can be hypercritical of the fact that too much information is being accessed by visual formats. Regardless, one must move on to a more productive acceptance and examine what can be done with the realities of what is actually going on. There is hope in the fact that CD ROMs and the Internet will provide and do provide enormous potential, but this must be contextualized properly, for without historical paradigms, societies can lose their way (Stille, 2002, p.xiv).

In an often cited article on CD-Rom's and history, Roy Rosenzweig shows that technology has much to offer the discipline of history and has the capacity to "transform the way we research, analyze, teach, and present the past." Rosenzweig qualifies that

statement by warning of the past hype that has been heaped on various new technologies and their failed impacts in furthering the cause of the humanities (Rosenzweig, 1995, p.1622). The technological sophistication of some CD-ROMs allows for access and freedom in the way that many books or traditional lectures don't. Key here is the fact that many of the CD-ROM's available have the ability to utilize the language of students and at the same time, quality CD-ROMs can enhance the research and the teaching process. Allowing the viewer/student entree to a video clip of a famous speech, literally hits the point home, in a way that slides or audio tapes cannot. Given the fact that so much of twentieth century history has been recorded in visual formats, the usage of such documents is extremely valuable (Rosenzweig, 1995, p.1624). The ability to access musical performances, newsreels, broadcasts and other forms of popular culture not only accentuates the awareness of historical knowledge, but can and does deepen interest in the topic.

William G. Thomas, III, has been at the forefront of utilizing technology to convey and impart history. To a great extent, he feels that computer technology and electronic delivery systems have a place in the dissemination of historical scholarship. In an article that cogently summarizes the state of this situation, Thomas writes that it is much more than data collection and analysis, two staples of historical inquiry, but venues such as the Internet and the Web have, "presented new technologies to enable and create aesthetically appealing, multifaceted works that emphasized complexity, extensibility, and multiple viewpoints." Thomas implies that technological information systems are now at a point where they could be harnessed to accentuate the process of historical enquiry and "allow historians to do better in their scholarship" (Thomas, 2001, p.416). What Thomas cites as being particularly interesting is the utilization and appropriation of developments in literature, art and criticism, but in particular, post-modern criticism, as barometers or maps for historians to follow. The concept of an open-ended textual narrative along with the possibilities of hyperlinks, has been especially useful in this case, particularly among those historians subscribing to the narrative tradition of history (Thomas, 2001, pp 416-417; Note 3). While there has been much opposition to these approaches and many variations as well, one must be impressed with some of the results.

Thomas's own work at the Virginia Center for Digital History which has resulted in a number of offerings in electronic form, allows for an open-ended dialogue as well as utilization of new, cutting edge formats. One version of this process "tries to structure the scholarly form of a historical journal article in such a way that it provides strikingly enhanced accessibility, readability, and connectivity without compromising the professional craft of historical narrative" (Thomas, 2001, p.419). Referencing the work of Robert Darnton, who warns about the vast void of non-information in the cyber-world, Thomas stresses that accessing links and/or "hyperlinking" is a key attribute in the new forms of historical, digital scholarship. This is obvious both for practitioners and consumers of history. The ability to reference other

sources and sites, to see and hear, move to and fro, is something important because to Thomas - and others, it offers exciting possibilities. Significant here is the fact that "hypertext" is a new and excellent form of annotation. With that in mind, historians such as Thomas, see themselves,

as part of a continuum of scholarship, picking up some traditions from centuries ago, such as glosses, commentary, and footnotes; some neglected experiments of recent decades, such as social science history and narrative innovation; and some emergent technologies, such as an open and extensive mark-up language that permits a more powerful and flexible kind of linking than we had in 1999 - or 2000, for that matter. Ideally, historians will combine these tools to create a professional scholarship that is richer, more rigorous, and more useful than current practice permits. (Thomas, 2001 p.420)

According to Thomas, it is an auspicious time for the furthering of historical scholarship within digital parameters (Thomas, 2001 p.421). Whether this involves the further exploration of Linkages, or piggybacking on existing digital archives, both of which involve the harnessing of "manuscripts, maps, images, and other data", a form of standardization and elegant simplicity in inter-connectivity could be reached. The merging of library techniques with hybrid forms of interactive museum-like exhibits is one such result. All in all, this will allow for comparative perspectives previously unheard of as well as levels of connectivity that will facilitate a new level of dialogue and debate (Thomas, 2001 p.422-423). But until this point is reached, there will only be a gradual incorporation of technology into the heart of historiography.

Professor John Lutz implies that the way we use computers, primarily for historical discourse, is not much different from what is available with older technology. A form of built-upon variation is what is happening which he suggests stems from the historical antipathy that many historians and scholars within the humanities have towards technology (Lutz, p. 428). To counter balance this, Lutz posits a re-balancing of this equation by practitioners to almost take control and harness what technology has to offer. In harmony with many who are, at the very least, quite comfortable engaging with technology, Lutz posits a strategy where the book version is not the final word. What is required is that within the rubric of what he calls "our critical intellectual responsibilities", there must be a move to react to or out rightly "embrace technologies beyond the book" (Lutz, p.429). Unlike so many who glorify technological offerings without consideration of the consequences, Lutz, while excited about the options, is also careful and thoughtful. He feels, and quite accurately, that to graduate with a degree in the humanities should very importantly include the traditional curriculum requirements but as well, the ability to "analyse critically print, film, video, and other digital communication including the Internet. The alternative," he writes, "is to fail in our social

responsibility and to lose our social support" (Lutz, p.429). Given the increasing amount of history being presented in the formats listed above - beyond print - this is a wise recommendation. A significant way to reach this harmony is to not just think outside of the box, but to reinvent how we interact with new information technologies (Lutz, p.429). This is what the students are already doing as illustrated by Sherry Turkles' comment made in the opening of this paper.

What does technology have to offer that will be useful in teaching and accessing history? One answer to this question asked by Lutz is that "it must improve how people think historically." This involves everything from having a foundation about a time before now to being able to follow an event through time, to weighing differing viewpoints, to an awareness of how not to engage in presentism. Lutz states that the resources available on the Internet are vast, but in teaching historical skills, there isn't much out there. This is a result of the dependence on "old technological metaphors," which use the book, or the encyclopaedia, as their models.<sup>22</sup> Lutz cites a number of very engaging sites, such as a simulated recreation of P.T. Barnum's American museum, which have potential, but states quite severely that these examples are too closely book-based. In his words, the problem is that "they do not push beyond the book metaphor, where the student is the consumer of a history packaged, often creatively, with a choice of routes in the material, by an author or team of authors" (Lutz, p.430). Even the vast storehouse of information available in digital formats such as the American National Digital Library or Early Canada online, which on one hand are clearly advances, are still, according to Lutz, quite conservative. Despite this conservative format, they give the student of history a chance to be active participants in the creation of history (Lutz, p.431). This in turn, provides a stimulating historical experience, which attempts to harness the best of what is available. Although built upon an existing textual structure, these sites foreshadow the exciting possibilities to come. The most sophisticated versions of these Internet sites allow the student not only to hear and see aspects of history, but to engage in a dialogue which is a wonderful pedagogic experience. The use of photographs, letters, actor's voices, and maps greatly accentuate the historical experience for students comfortable with interactivity and the fluidity of multi-media.

In Italy, there have been a number of progressive attempts to codify history on the Web and the Internet. There is Elio's - Electronic Library of Historiography which provides a vast storehouse of obscure historical texts as well as Reti Medievali a medieval site which incorporates a resource archive, a digital library and an electronic journal, a project put together by a university consortium. To simply dismiss the Web as an improper site for the transmission of historical data is, like the dismissal of historical film, ludicrous. Digital archives in particular are key places of access. It is now possible to view documents hitherto buried and completely inaccessible. The Florentine State archives provide scholars, in digital formats, entree to the long and contentious history of that region. What is often

overlooked is that the digitized format allows for the complete preservation of documentation which in turn, "safeguards" these texts" from further erosion. The fact that virtually anyone can view these products makes the burdensome cost of travelling to the place they reside, no longer a factor (Abattista & Chiocchetti, 2000, pp.292-293).

It is interesting that the one area that Lutz feels has pushed the envelope is in the realm of computer games. The most hard-headed traditionalist is naturally going to balk at the thought of using a game or simulation format to acquire historical knowledge, but unless one has either tried the offering or seen students working within this format, one should suspend passing of judgement. Like much of what Hollywood had to offer as far as historical films and costume dramas, these historio-fantasy simulations are deeply researched and accurate historically (Lutz, p.432). Lutz cites the Age of Empires, Sim City and Deus Ex as three examples. Lutz does not commit to saying that these current manifestations are "great teachers of history", but does confide that more of this kind of technology should be utilized and developed for the teaching of history. While budgetary constraints must be considered, the possibilities of putting students into "other places, other times," and "(giving) them the opportunity to interact with historical people," is the best way to get them to think historically (Lutz, p.433-434).

The simulation games that engage player, viewers, and students with history are, in fact, closely related in a number of ways to interactive CD-ROMs that educators and educational institutions have used (Note 4). The words educator and educational institution are employed because it has been the museums and libraries and their ancillary components rather than schools who have been at the forefront of this approach. Fundamental here is the concept or impression of "real-life" and tactile accessibility.

Research has demonstrated that students who have a foundation of knowledge will acquire new knowledge via computer assisted learning - under the right conditions. Another way of saying this is to suggest that if a student is curious and is supported, the CD-ROM versions of history will greatly enhance the ability to absorb another level of knowledge. Further, if information is presented in formats that mirror comfort levels of the student, the knowledge acquisition is also increased (Note 4).

One of the main problems facing information/knowledge that is conveyed in a visual format, and one that has been alluded to throughout this work, is simply, the bias against the visual. The impartation of information in visual format has traditionally been dismissed as light-weight and not scholarly when compared to traditional delivery systems. Chris Lantz writes, "Visuals are often so strongly associated with entertainment that they are considered incapable of stimulating or organizing thought toward cognitive objective" (Lantz, 1995, 2). But quite to the contrary, visual forms of knowledge dissemination are loaded with information and require

forms of analysis that can be as rigorous to master as reading is (Lantz, 1995, 3).

David J. Staley echoes Lantz's concerns. Staley suggests that simply put, the bias against the visual is overwhelming. The image is viewed as inferior to the word. Subsequently, what is considered serious, acceptable academic history is not what is projected in visual formats. Staley uses an illustration from William McNeill's *The Rise of the West* to get this point across. It is, according to Staley, more than an illustration. The "visualization" (of an historical period in Japanese society) is significant for today's audience because it is capable of conveying information in a particularly unique fashion. "The visualization," writes Staley, "allows one to perceive simultaneously the whole and the individual parts in a manner reminiscent of a map or the periodic table." Importantly as well, Staley makes the salient point that this kind of visualization is not a mere accoutrement to the written word - it is not "designed to break up or enliven" the text, but rather, "it can stand alone as a vehicle of historical thought and scholarly communication" (Staley, 2003, p.5).

Over the last ten years, millions of historical documents have been placed on the Web. Access as well as volume has increased (Lee, 2002, p.504). Digital information of all kinds is proliferating at an alarming rate. What is important to be aware of is the fact that spurious and silly information, as well as erroneous and mistaken-ridden data occupy the same space as enormously valuable documents, well-researched essays and creative and mind-expanding Web sites. As the authors of a recent book put it, "After all, thirteen hundred words of gibberish and the Declaration of Independence are digitally equivalent" (Brown & Duguid, 2002, p. xiii). Sorting out what is relevant, in essence filtering out the problematic content, remains a huge concern. One way to get around this obstacle has been to employ a rating system which attempts to classify and to advise both students and researchers on acceptability (Tebeau, 2003, p. 1490).

When students are encouraged to explore multimedia pathways for historical discourse, some interesting, but not surprising, results can occur. In a project of multimedia development for a history seminar, students were instructed to develop web-based/multimedia essays. According to an article on the assignment, the project was overwhelmingly successful. What occurred, though, was the preference for viewing the images rather than reading the written text. According to Professor Daniel Ringrose,

At the public open house it quickly became evident that few visitors, if any, started by reading this or any of the project texts beyond the initial introductory page. Instead, the vast majority preferred to explore the maps, listen to the annotations, and only occasionally (and often accidentally) follow links from the visual materials back to the body of the paper. (Ringrose, 2001, p.5)

The obstacle, to overcome, according to Ringrose is to get the “reader” to balance the linear with the other “entry points.” What Ringrose means is that the “intensely visual nature of multimedia” automatically privileges the visual over the textual. “One well-known consequence,” he writes, “is that most people avoid reading lengthy texts on screen.” Maps and other elements of visual “iconography” were often the first choice rather than the written texts (Ringrose, 2001, p.12).

One of the results of the utilization of computers within the rubric of historical discourse is that students become active agents in the discovery of the history process. As students are encouraged to become more active in the pedagogy of learning, via the computer, there is more emphasis on student centred learning. This is one of the most contentious aspects of the digital divide. With the employment of “computer-based technologies,” there is a shift towards student centred learning in a manner that is marked and noticeable (Lee, p.504). According to Historian Linda Pomerantz, “The student’s active learning is facilitated in that the computer-using student is in a better position to direct his or her own access to information through the Internet.” Pomerantz feels that as more computer-based technology is incorporated into the classroom, the role of the instructor will no doubt be altered. In particular, she implies that the current “master of the classroom” status will evolve into more of a “guide or facilitator”, a very disturbing and controversial situation, especially to traditionalists (Pomerantz, 2001, p.1; 10).

What digital history often does, beyond making history accessible, is allow the student to play a role in the deciphering of history. Echoing Linda Pomerantz, John K. Lee writes, “In the digital genre of history, students stand side by side with professional historians generating an infinite number of interpretations from the electronic archives of the Web. Digital history encourages a view of the past that is tentative and process orientated” (Lee, p.508). This is very similar to Mimi White’s analysis of television’s relationship to history. White speaks of a “peculiar relationship” which is brought on with time connotations, which in turn causes a form of “hyperhistory.” History presented in this kind of visual medium, is not bound to traditional orderly presentations, but rather, is present as “fragmentary” and “multiple”. History gets conflated and can be both present and past, not necessarily closed and final (White, 1989, pp.282-284).

One of the obstacles inherent in getting the full-fledge embracement of the new technology curriculum adopted is the simple resistance to reading lengthy documents on the computer screen. Research at Carnegie Mellon University in Pittsburgh buttresses this concern. One of the authors of a survey of history and the Web puts it like this: “students have a deep-rooted aversion to reading these documents from their computer screens, which may result in lowered levels of assignment completion, decreased comprehension, or other unintended consequences” (Longhurst, 2003, p.1). This somewhat

undermines the successes that have been applied to computer-based education. Yet as a coda to this, one must bear in mind that “asynchronous Internet transmissions”, as a form of communication do have a higher rate of engagement and often do result in better quality student-teacher interaction (Pomerantz, 2001, p.10). This though, is not the same as reading on the computer.

One of the richest examples of how the Internet and the Web can be employed to teach history, and more importantly, to do it well, is to look at the work being done with the French Revolution. One could argue that more sites and digital archives are being directed to the study of France, 1789 - 1815 than virtually any other era. One reason for this has to do with the fact that so much historical data that remains vis-a-vis the Revolution, has a foundation in the visual (Brown, 2001, p.4). The numerous visual icons on and about the French Revolution have opened up a new world to students of that era. They can now access a variety of texts, images such as engravings and caricatures, songs and other historical paraphernalia devoted to the Revolution. Like other Web-based offerings, exposure to primary source materials is of particular pedagogic appeal. On the one hand, like many visual sources, these many sites serve as a starting point but increasingly, they can also stand alone (Brown, 2001). As David Trask has implied, the situation for the historian today, can be challenging. Trask writes,

We must find effective ways to introduce the study of history, an academic discipline embedded in the conventions and understandings of print media, to students whose facility with the print word is limited. It is electronic media with which they are most familiar. (Trask, 2002, p. 473)

Trask is adamant in insisting that it is the electronic world that the students live in and subsequently, it is that world that “shapes” their understanding of what constitutes history. Historians must reach out to students in that the language.47A what does 47A mean? very successful digital web archive that speaks to Trask’s concerns but that also accomplishes many other - traditional - objectives, is the Library of Congress’ “American Memory Project”, which employs numerous novel offerings (Lee, 2002,p.505). The fluidity and accessibility of digital historical resources is one of the main ways they are both different and unique - in comparison to traditional sources. John Lee suggests that “the Web’s hypertextuality encourages alternative narrative forms” which goes along way to speak to the disposition of contemporary students (Lee, 2002, p.508).

The utilization of Web-based resources usually has two major drawbacks. The first is the plagiarism problems that result from students downloading material and simply not citing it. The second has to do with the often and many uninformed students running a search on an engine and getting hits that they can’t make sense of. This can lead to them writing a paper on the Holocaust which cites

information from Holocaust Denial sites (Kneeshaw, 2001, p.154).

Most people gravitate towards ideas and outlets that they feel comfortable with. In some cases, this is what they have grown up with while in other instances, it reinforces a belief system of some kind. For historians and for teachers of history, the dominance of the written word is the natural and expected form of expression. This omnipresence has been absolute. David Staley makes the following observation:

The written word, the central idiom of communication in the practice of history, surrounds us like an atmosphere. Perhaps because of its ubiquity, however, we rarely notice writing's effects on our discipline, how it shapes our thoughts, interpretations, and assumptions. (Staley, 2003, p.14)

Staley points to Hayden White's idea that written history is as much a "constructed artifact" as, say, film or other forms of predominantly visual history. White, according to Staley, contends that written history is about "condensation, displacement, symbolization, and qualification" and so is filmed history. What constitutes the difference is the medium, not "the way messages are produced" (White, cited in Staley, 2003, pp.16-17).

Perhaps this is the essential question to ask. It is no secret that computer technology and the Internet will influence and affect historical discourse. It is happening already. One may also ask, what role instructors will play. It is vital that they are "confident" in their role and comfortable with the technology or else they will remain isolated from the benefits it offers and unaware of the dangers it poses. If this is in fact the essence of the situation, then one must assume that in order for the deliverers of history to be effective they must go down that path with a fair amount of confidence and a willingness not just to be involved but to be active participants (Cantu & Warren, 2003, pp.x, xi, xiii).

D. Antonio Cantu and Wilson J. Warren have written that the most important educational transmutation to occur in the last one hundred years may have been the "introduction of computers and the Internet into the class room" (Cantu & Warren, 2003, p.49). The impact of this change has yet to be truly felt. Yet, one significant result is rearing its head. This has to do with the fact that students at both the high school and the college level are coming to the classroom or lecture hall with a computer/visual framework firmly in place. One could even say that this is even more pronounced than the generation raised on Sesame Street. As a number of writers - James Glieck, J. C. Hertz and Douglas Rushkoff - have suggested, there has been a subsequent expectation of similarity in the temples of learning. Cantu and Warren state, consequently, that "a growing number of students are no longer content to have history fed to them through means of a

didactic lecture. Instead they are beginning to demand that history teachers integrate the wealth of digital historical resources available on the Internet into their curriculum" (Cantu & Warren, 2003, p.49). At the same time, this involves presentation skills that utilize PowerPoint and WebQuest. And once again, these authors put the ball in the hands of the teachers. It is, they imply, up to the instructors to utilize the technology at hand and to deliver. When successful, they are careful to remark, these predominantly visual delivery systems have the power to provide a "conceptual hook that most students find quite appealing and engaging" (Cantu & Warren, 2003, p.49). Despite Clifford Stoll's remark that learning isn't fun and should be hard work, the appeal of visual technology to students and the autonomy granted can be harnessed.

### Notes

1. Jane Healy writes that the most common media forms remove children from social interaction and free play. When they do engage in activities on the computer, such as Carmen Sandiego, they seem to be simply focussed not on learning, but rather, on getting to "the finish as quickly as possible. They learned," writes Healy, "what worked and didn't work in that particular game, but little about reflective problem solving or the general concepts involved." "Visual Technology: Vacuous or Visionary?", p. 16
2. The concern that can't be overlooked is the enormous amount of money spent on computers, and software and the expense of teachers, librarians, and books. Once these purchases become obsolete or require maintenance the institution is left back where they started. On the other hand, the right technology in the right place can be invigorating as far as libraries go. See Peter C. Emberley, *Zero Tolerance: Hot Button Politics in Canada's Universities*, (Toronto: Penguin, 1996), p. 186
3. William G. Thomas, III, "Blazing Trails Toward Digital History Scholarship," pp. 416, 417. Robert K. Logan, in *The Fifth Language*, pp. 275, 276, writes that linked pages which use hypertext, are in turn, very related to oral traditions of storytellers. As alluded to earlier, the Greeks often slanted a version to appeal to a particular audience. Like Jazz, there is an improvisational quality. A further parallel is found in discussion groups which remind Logan of the classic Symposium dialogues.
4. One of the problems that the first generation of CD-ROM games contained is their dependence on simple "decision-trees" which necessitated a yes or no answer. Roy Rosenzweig writes that this caused a problem for historians who are "fans of 'maybe', 'perhaps' and 'partially'," as ways to deal with the "ambiguity" and "nuance" of historical analysis. See Roy Rosenzweig, "'So, What's Next for Clio?' CD-ROM and Historians," p. 1626.

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**Mark Moss** holds a Master's degree in media and environmental studies from York University and a doctorate in history of education from OISE/Uof T. He is the author of *Manliness and Militarism* (Oxford, 2001) and numerous essays of history and popular culture topics. His current project focuses the relationship between visual forms of historical knowledge and their impact on traditional historical thought. Mark is a Chair in the Faculty of General Education at Seneca College. He can be reached at [mark.moss@senecac.on.ca](mailto:mark.moss@senecac.on.ca) or 416 491-5050 Ext.2231

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