

Past Indiscretions: Digital Archives and Recombinant History

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Abstract

This chapter examines the impact of digital technologies on the writing of history, arguing that the narrative logics of the database and search engine have resulted in two divergent movements – one that seeks to articulate a "total" history that is encyclopedic in scope and rooted in relatively stable conceptions of historical epistemology; another that exploits digital technology's potential for randomization and recombination in order to accommodate increasingly volatile visions of the past. At the opposing ends of this spectrum are Steven Spielberg's Survivors Project, a randomly accessible archive of over 100,000 hours of video testimonies by Holocaust survivors, and the Recombinant History Project's Terminal Time, an artificial intelligence apparatus that constructs infinitely variable historical documentaries based on audience biases and beliefs. Although these two projects represent competing conceptions of historiography, both are enabled by the proliferation of digital information systems.

In 1965, the analytical philosopher Arthur Danto described what he called the "Ideal Chronicler," a theoretical model for the ultimate form of history-writing. Danto's Ideal Chronicler would possess the ability to record and analyze the significance of every historical event from multiple perspectives at the same moment it is happening.¹ Although originally invoked to demonstrate the impossibility of an objectively perfect form of historiography, the values reflected in Danto's ideal – comprehensiveness, multiple perspectives, and immediacy – are revealingly congruent with those promised by the proliferation of searchable databases and digital distribution networks. Setting aside for a moment euphoric expectations of the wholesale transformation of culture that was supposed to accompany the digital age in the late 20th century, information technologies – for better or worse – have undeniably altered the way historical data is captured, processed, and disseminated. Coupled with the seductive, totalizing historical impulse described by Danto, contemporary digital historiography seems destined to pursue a direct and unproblematic relation to the past that awaits only the technical apparatus capable of rendering it in its wholeness and totality.

At the same time, however, digital technologies have enabled strategies of randomization and recombination in historical construction resulting in a profusion of increasingly volatile counter-narratives, "docufables,"² and histories with multiple or uncertain endings. At the heart of these alternative visions of the past are the database and search-engine, the primary mechanisms for organizing and disseminating information within digital networks. Whereas literary tropes have, since the 1970s,³ been recognized as offering a foundation for much historical writing, the database and search engine enable non-linear accessing and combining of information into forms that defy both literary and historical conventions. Works of history that were once understood to comprise an expanding field of collective historical knowledge are thereby repositioned as raw materials in infinitely reconfigurable patterns of revision and recontextualization. These two divergent thrusts within digital historiography represent competing conceptions of the past and give evidence of increasingly contested paradigms for historical epistemology.

Digital Histories

It is a truism of the post-Foucauldian world that the existence of categories of knowledge and institutionalized disciplines shapes what and how we think. Just as the emergence of the photographic apparatus altered 19th century perceptions of the world,⁴ increasingly powerful digital tools for storing and retrieving historical information now impact the way the past is conceived and reconstructed.⁵ The global reach and virtually limitless capacity of the Internet, in particular, has inspired universities, libraries and archives to position themselves as distributors rather than simply preservers of information. As a result, institutional resources are increasingly redirected toward the digitizing and organizing of historical information into databases that are accessible via both public and proprietary computer networks. The growing conception of computers as offering access to a master network of interlocking databases points to a transformation of fundamental notions of the past and the nature of historical research. It is within this milieu that Hal Foster asks,

Is there a new dialectics of seeing allowed by electronic information?
...Art as image-text, as info-pixel? An archive without museums? If so,
will this database be more than a base of data, a repository of the
given?⁶

The answer may be found in the movement toward “database histories” – i.e., histories that are comprised not of narratives that describe an experience of the past, but collections of infinitely retrievable fragments, situated within categories and organized according to predetermined associations.

Writings in literary theory and the philosophy of history have demonstrated that the various forms that historical writing has taken are deeply entwined with the prevailing ideologies and literary conventions of their time. In recent decades, similar efforts have been undertaken to theorize relations between motion pictures and history. With the provisional incorporation of visual (film, video, televised) histories into academic curricula, historians have begun to recognize the unique power of cinematic representation to bring the past “to life,” promoting public interest in and – with some caveats – knowledge of historical events. A degree of experimentation with form, telescoping of temporality and character compositing is even tolerated in the interests of pursuing “serious engagement” with the past.⁷ Although much that is written about film and history remains devoted to domesticating the media industries’ more flagrant departures from fact, larger questions of the impact of visual media on fundamental conceptions of the past lie just beneath the surface.

When the perceived reality of the cinematic spectacle is mobilized against, rather than in service to, the interests of a singular historical narrative, a film’s strategies of historical construction and rhetorics of authenticity are brought to light. This is particularly important within the realm of digital historiography, where the already problematic ontological status of photographic realism confronts even greater challenges. Rather than focusing on the potential for artifice, however, the majority of public discourse surrounding the move to digital image acquisition has focused on the ability of digital video to capture or emulate the real world beyond the capabilities of conventional cinema. Remobilizing cinema-*verite*’s outworn association of authenticity with the immediacy of a newly mobilized cinematic apparatus, the Danish *Dogma 95* movement, for example, eschews all forms of Hollywood artifice,

gratuitous action and generic convention. Directly inaugurated by the high quality images captured by small, consumer grade mini-DV cameras, *Dogma 95's* "Vow of Chastity" requires its adherents to declare, "My supreme goal is to force the truth out of my characters and the frame of the action."

Considerations of the role of digital image processing in Hollywood have likewise tended to emphasize the potential for verisimilitude. Historians have approvingly noted Ridley Scott's elaborate reconstructions of Ancient Rome in *Gladiator* (2000) and Steven Spielberg's meticulously researched, prehistoric microcosms created for the *Jurassic Park* trilogy (1993, 1997, 2001). Computer generated imagery, thus deployed, reinscribes these cinematic visions of the past within a narrative realist tradition that is coextensive with the type of literary history theorized by Hayden White in the 1970s. In spite of its potential for experimentation with genuinely eccentric forms of historiography, digital media's potential to construct willfully counterfactual histories – e.g., the compositing of Tom Hanks into archival footage of the desegregation of the University of Alabama in *Forrest Gump* (1994) – has been largely written off as a symptomatic excess of postmodern culture.⁸

In practical terms, the implications of digital technology for archiving have largely focused on technical questions of how best to preserve and disseminate historical information using rapidly expanding networks, notoriously transient file formats and unstable storage media. Equally important debates have emerged around questions of intellectual property and the control of archival images, film, video and sound recordings. With the concentration of image and sound archives in the hands of a decreasing number of media conglomerates, the ability to construct widely distributable visual histories increasingly necessitates cooperation with or oversight by corporate entities. A few organizations have been established to advocate non-corporate-dominated solutions to these problems, including the Long Now Foundation, which is devoted to long-term planning for the preservation of digital culture, and the Electronic Frontiers Foundation, which promotes freedom of expression in the digital domain. It is ironic that history, at the very moment when it is poised to reap the greatest rewards offered by digital technology in terms of reconstruction, preservation and dissemination, is instead faced with its greatest threats to innovation, longevity and accessibility.⁹

Total Archives

Along with the shift to digital histories comes a change in perceptions of the role of the historian. The Medieval historian, as Hayden White notes, was exemplified by the disinterested chronicler or annalist whose sole responsibility was to record the facts of the past as a realization of God's will, free of interpretation or context.¹⁰ The historian of the modern era, in contrast, is often characterized as a detective, a lone, single-minded professional trained to seek out and judge the authenticity of historical evidence, artifacts and testimony. These shifting conceptions of historical work and historical evidence suggest yet another model for the working historian – that of the computer scientist or hacker who is able to freely traverse computer networks and databases, discovering, reproducing and linking data into new combinations.¹¹ The primacy once accorded to narrative in the structure of history writing is thus being significantly challenged by the recombinant potential of the database. The work of the historian, once understood as the "assembling of progressively larger historical truths,"¹² must now contend with the construction of open architecture databases and the accretion of huge volumes of historical events, facts and images.

Dana Polan has noted that, in literature and film of the 20th century, the figure of the university history professor is typically presented as an ineffectual and disconnected technician. Polan suggests that this is symptomatic of popular conceptions of the work of the historian as being the production of "reliable mimesis," citing the popularity of E.D. Hirsch's *Cultural Literacy* (1987) as a prime example of the repositioning of the past as "fixed pieces of knowledge and of history as positive retrieval."¹³ With its list of 5000 references – dates, names, facts – that "every American needs to know," Hirsch's annoying but influential book presents historical information in a database form that is structurally free of narrative and interpretation.¹⁴ Historian Robert Rosenstone likewise notes that historians in popular culture suffer from an "image problem" exemplified by the figure of the history teacher in *All Quiet on the Western Front* (1930) who misrepresents the experience of war in order to encourage young men to fight in World War I. Rosenstone also describes his profession's gravitational pull toward a mode of investigation that he calls "*Dragnet* history," which is characterized by the single-minded pursuit of "just the facts."¹⁵

Within popular culture, a notable exception to these characterizations of the professional historian may be found in the figure of Steven Spielberg's Indiana Jones. Played by Harrison Ford, Indiana Jones first appeared in *Raiders of the Lost Ark* (1981), followed by *Indiana Jones and the Temple of Doom* (1984) and *Indiana Jones and the Last Crusade* (1989).¹⁶ Although unforgivably anachronistic in their resuscitation of colonialist ideology, Spielberg's films offer a fascinating fantasy portrait of the heroic, modernist historian. In *Raiders of the Lost Ark*, Jones is a mild-mannered, nerdishly bespectacled history professor who turns into a whip-cracking adventurer in order to rescue a biblical artifact from the Nazis. At the conclusion of the film, Indiana Jones has successfully subdued the natives on multiple continents, defeated the Nazis and transported the "arc of the covenant"¹⁷ from Africa to the United States. However, rather than being received as a world-changing historical relic, the arc is packed into a numbered crate and deposited in a massive government archive.¹⁸ The film ends bitterly, with a crane shot that pulls back to reveal thousands, perhaps millions, of similar crates stacked floor to ceiling in a warehouse-like archive from which, it is clear, retrieval would be next to impossible.¹⁹ For all his daring and selfless courage, Indiana Jones is, in the end, defeated not by the forces of evil or the supernatural but the implacable bureaucracy of the Federal Government archive.

More than a decade later, Steven Spielberg would offer his own response to the irrelevance and obscurity of the total physical archive. During the production of *Schindler's List* (1993), Spielberg was so moved by hearing spontaneous testimonies of Holocaust survivors who came to witness the shooting of the film on location in Poland²⁰ that he decided to begin recording survivor testimonies on video. Following the success of *Schindler's List*, which earned seven academy awards including Best Picture and Best Director, Spielberg established the Survivors of the Shoah Visual History Foundation. The Foundation was charged with the Sisyphean task of videotaping testimonies by every living survivor of the Holocaust. Part of the goal was to create an undeniable mountain of evidence that would have a continuing presence generations after the last survivor has died. The *Survivors Project* resulted in interviews with over 50,000 Holocaust survivors from 57 countries, conducted in 32 languages, and compiled on over 100,000 hours of digital videotape.²¹

Faced with the overwhelming challenge of making this body of material accessible, the Foundation created a proprietary, high-speed delivery network capable of providing access to all 100,000 hours of testimony at selected sites – mainly Holocaust museums – around the world. The interviews reside in a system that allows viewers at multiple locations to retrieve full resolution video and sound over a fiber optic network via a searchable, cross-referenced database. Rather than simply presenting 100,000 hours of talking heads,²² the Foundation is developing a system for automatically generating montage sequences by tying a database of archival film images to an index of approximately 18,000 keywords identified within the spoken testimonies. The two databases will then be configured for dynamic combination so that if a survivor refers, for example, to riding on a train, the video will automatically cut to an image of a train while the audio continues in voice-over. In addition to adding somewhat generic visual variation to the interviews, this practice serves to authenticate the memories of the survivors as direct historical evidence, a strategy that is in keeping with longstanding traditions of oral history and documentary filmmaking.²³

Although somewhat historiographically anachronistic, the *Survivors Project's* singular privileging of experience in the case of Holocaust survivors may be viewed as a return to the role of the historian as an impartial chronicler and assembler of evidence.²⁴ Due to the explicit political motivations of the Foundation, questions regarding the accuracy or verifiability of individual testimonies are elided. The need to establish a primary record of these vanishing accounts in the face of historical revision and widely perceived tendencies toward cultural amnesia superceded the historian's conventional need for verification and cross-referencing of testimonial claims.²⁵ In addition to the stated goals of the Shoah Foundation, this vast archive, the overwhelming size of which renders its contents inseparable from its system of access, may offer its greatest potential not as a total archive but as a resource for subsequent interpretations and narrative combinations – a foundation for future historical discourses as much as an end in itself.

Memory Pictures

The problem with any total archive (as with the general overproliferation of information on the Internet) is that even a searchable database may not adequately represent or make available the range of materials it contains.²⁶ As an interim solution, the Shoah Foundation has created multiple, edited collections of testimonies on videotape and CD ROM that distill selected survivor experiences into an interactive format suitable for use in libraries and schools. The interactive format, in particular, has proved effective for teaching Holocaust history and has been replicated in the media divisions of numerous museums. As Janet Murray has argued, the "encyclopedic mode" of data organization creates an illusion of breadth that obscures the actual processes of selection and exclusion to which any data set (including the complete Survivors collection) is inevitably subjected.²⁷ The textual processing to which all forms of historiography are subjected should not be regarded as detracting from the pure capturing of experiences or memories. Rather, when pursued with rigorous self-consciousness, the processes and problematics built into every form of historical writing may positively contribute to the power and significance of the project.

A particularly eloquent critique of the unproblematized oral history may be found in the documentary film work of Marcel Ophuls. Since the 1970s, Ophuls' production company, Memory Pictures, has created a vast and underrated body of work devoted

to interrogating the role of memory in the writing of history. Averaging over four hours in length, each of Ophuls' documentaries focuses on moments of historical trauma. At least three of his films deal directly with the Holocaust, including *The Sorrow and the Pity*, *Hotel Terminus*, and *Judgment at Nuremberg*, while others have addressed wars in the Balkans (*The Troubles We've Seen*) and Vietnam (*Harvest of My Lai*). But more than merely chronicling the Holocaust, Ophuls' films grapple with the way these moments have been processed – written, remembered, obscured, revised, or forgotten – by historians, media practitioners and the public. Although Ophuls' work frequently highlights the imprecision and the instrumentalization of individuals' memories, the goal of his work is not to debunk oral history *per se* nor is it to render the past unknowable. Meaningful engagement with the past, he merely suggests, requires an investment of time (at least four hours), intelligent skepticism, and a willingness to engage with the contents of both history-writing and film on a processual level. The responsibility for preventing the erasure, forgetting or denial of history, Ophuls argues, lies not in the creation of a total archive, but with the cultivation of a formidable audience-public capable of thinking, remembering and constantly questioning what and how we know.

An additional, cautionary note on the utility of the totalizing historical impulse may be found in Jorge Luis Borges' short story "Funes the Memorious." Although written long before the advent of digital culture, Borges' story presents a critique of the debilitating weight of perfect recall. The story's eponymous character suffered a head trauma as a child, which left him with the mind-numbing ability to remember every detail (visual, emotional, somatic) of every event he ever experienced. Overwhelmed by the continuing overaccumulation of data in his head, Funes is eventually forced to spend his days sequestered in a darkened room, avoiding all sensorial experience.

In effect, Funes not only remembered every leaf on every tree of every wood, but even every one of the times he had perceived or imagined it. He determined to reduce all of his past experience to some seventy thousand recollections, which he would later define numerically. Two considerations dissuaded him: the thought that the task was interminable and the thought that it was useless. He knew that at the hour of his death he would scarcely have finished classifying even all the memories of his childhood.

Borges' proceeds to suggest that his character's inability to forget has driven him to the brink of madness, devising ever more arcane numerical and linguistic systems in an attempt to structure and regain control over the contents of his mind.

Without effort, he had learned English, French, Portuguese, Latin. I suspect, nevertheless, that he was not very capable of thought. To think is to forget a difference, to generalize, to abstract. In the overly replete world of Funes there were nothing but details, almost contiguous details.²⁸

In Borges' story, the burden of recall prematurely ages and eventually destroys Funes' body, while his mind ceases functioning except in its efforts to control the rising flood of memories, compounded by each recollection and recollection of a recollection, like the infinitely compiling data of a feedback loop. By the end of the story, Funes can neither process nor make sense of the details he holds in his mind. He can no longer think, the story's narrator notes, because thinking *requires* forgetting, abstracting, generalizing. It is in the active interplay between

remembering and forgetting – what Andreas Huyssen called “creative forgetting” – that historical meaning is constructed. And it is within an interpretive context that memories are transformed from mere data into vibrant, critical histories.

Total historical archives are motivated by an encyclopedic impulse to capture and preserve bodies of knowledge in as near a state of completeness as possible. It is a form of history writing rarely aspired to in modern times. A monumentally modernist event such as The Holocaust, as Hayden White and Dominick LaCapra have argued, may in fact require a modernist mode of representation such as those exemplified by the *Survivors Project*. However, on a practical level, there is a danger in locking these events into organizational systems that may well prove increasingly anachronistic and naïve in light of contemporary modes of historical thinking. The total archive, for all its utilitarian serviceability, risks ossifying the very lives, information, narratives and interpretations that are most crucial to sustain as evolving, contestational moments of engagement with the past.

Recombinant History

How can historiography be reconsidered not in terms of factual reclamation, but as an active process of construction, animation and recombination? The radical potential of the open-architecture historical database lies in the prospect of reconfiguring the categories of knowledge and understanding on which history is based. Foucault’s critique of the archive rested not simply on the fact that the concrete institutional structure of the archive conceals the networks of power from which it derives its authority, but that the creation of static, categorical divisions of knowledge obscures the processes by which knowledge is acquired and deployed. As a repository of historical knowledge, the archive further promotes an image of unity and stability that belies the discontinuity of history.²⁹ Above all, Foucault reminds us that knowledge does not form itself into discrete unities. Like history, it is discontinuous, disjunctive, chaotic.

In *The Archaeology of Knowledge*, Foucault describes his own historical practice as marking a shift from viewing history as a grand, totalizing narrative to a splintered conglomeration of sub-disciplinary investigations, each emerging from, and self-consciously subjected to, their own rules of formation. Foucault notes this movement away from a single history toward fragmentary histories as an important step toward acknowledging the chaos of the past and the unruliness of human thought. Discrete statements, he argued, must always be analyzed within a field of discourse and considered in relation to disruptions, discontinuities, thresholds, mutations, and limits.³⁰ Much has been written about the complicity of technology in developing systems of social control and instruments of surveillance – both corporate and governmental. However, the specific apparatuses of digital information storage and retrieval can also be tactically redeployed against constraining fields of knowledge. Within historiography, one of the most provocative examples of this critical redeployment may be found in a project known as *Terminal Time*.

Created in 2000 by a group of artists, computer scientists and filmmakers calling themselves the “Recombinant History Project,” *Terminal Time* is an artificial intelligence-based interactive multimedia apparatus that constructs real-time historical documentaries covering the past 1,000 years of human history. The creators of *Terminal Time* describe it as

a history engine: a machine which combines historical events, ideological rhetoric, familiar forms of TV documentary, consumer polls and artificial intelligence algorithms to create hybrid cinematic experiences for mass audiences that are different every single time.

Utilizing an applause meter to gauge audience responses to a series of questions regarding values and beliefs, *Terminal Time* bases its historical narratives on a database containing thousands of still images, video clips and written commentaries. Each "history lesson" deploys all the characteristic strategies of a mainstream historical documentary – omniscient narration, reenactment, archival images and film clips, documents, artifacts, testimony, etc. The resulting mini-documentaries are broken down into three parts representing the time periods 1000-1750, 1750-1950 and 1950-2000. Following each narrative, the audience is asked a series of questions intended to refine and focus their attitudes toward ideologies of race, gender, colonialism, technological positivism, etc. The content of the documentaries reflects a slightly exaggerated version of audiences' stated values, often making humorous associations and carrying historical ideologies to hyperbolic extremes.

Terminal Time's ironic appropriation of the audience-survey format critiques individuals' complicity in electronic data gathering technologies used to create marketing profiles. As *Terminal Time's* creators note:

Especially as more computer-mediated interaction moves into networked environments (e.g., the Web), the very acts of user intentionality, those manifestations of the power of free choice lauded by information technology enthusiasts, have become the raw material for corporate data collection.

The questions asked by the *Terminal Time* apparatus self-consciously mimic the demographic sampling strategies of the consumer survey. Part performance, part installation, and part cinematic spectacle, the project's tag line is, "At long last, *Terminal Time* gives you the history you deserve!" The introduction to the *Terminal Time* apparatus clarifies its operating premises for the audience with the following tongue-in-cheek affirmation of Enlightenment rationality and order.

With every new day, a new chronicle of history is born, arising from the ultimate design of the universe. Yet there is not the slightest theoretical importance in a collection of facts or sequence of facts unless they mean something in terms of reason – unless we can hope to determine their vital connection within the whole system of reality. We, as citizens of history are obliged to make and to be made by this system of reality since the beginning, and until the end, of time.

At a typical presentation of *Terminal Time*, the apparatus is presented twice to a single audience. During the first presentation, the audience is encouraged to respond genuinely to the survey questions, expressing their actual biases and opinions. The second time, however, audiences are encouraged to elicit different responses from the apparatus in order to demonstrate its ability to respond to varying ideological beliefs.³¹

In one *Terminal Time* presentation, for example, an audience who first described themselves as optimistic, white liberals who were committed to technological progress chose, in the second presentation, to describe themselves as African-

Americans who believed that the greatest problem facing society was that people were forgetting their ethnic heritage. They also claimed to be in favor of legalizing drugs, and continuing the decolonization of the Third World. The resulting "history lesson" portrayed Rastafarians as the central historical players with the main threat of globalization characterized as the breakdown of ethnic divisions. When the "documentary" reached the 20th century, Nazi Germany was described as having the right idea about racial purity but misguided in believing that the European races were superior to Africans. And in a subliminal flourish, each historical segment was accompanied by a Reggae musical score. The stark contrast between these two visions of the past resulted in precisely the kind of humorous, yet critical, juxtaposition *Terminal Time's* creators intend.

What's interesting, however, is not simply *Terminal Time's* illustration of the fairly commonplace assertion that history is open to multiple meanings that are dependent on ideology and preconception. A more provocative historiographical argument is posited in the premise of the apparatus that encourages audience members to lie – to pose as someone other than themselves – in order to generate alternate histories. In *Terminal Time*, historical truth and insight into the past are rendered accessible not through the conventions of academic historiography – exhaustive research or the careful treatment of facts – but through the dynamic interplay of truth and lie. Arguably, *Terminal Time* fails to pursue its own logic much beyond this observation, but in light of the remarkable persistence of positivist history (as seen in the earnest empiricism of the *History Channel* or the average Ken Burns documentary), there is much to be gained from work that dissolves the binaries that dominate discourses of film and history – fact/fiction; history/memory; real past/invented fiction – and demythologizes the ideological investment of historical documentaries.

In another presentation of *Terminal Time*, the audience activated the anti-theological "rationalist" historical narrative via the applause meter. The resulting historical narrative embraced and hyperbolized the premises of Enlightenment rationality:

Amazing technological advances flowed from the minds of the scientists. In England one of the first computers was built to crack the military codes. At the radiation lab at MIT, radar was developed, allowing ships and planes to see through night and fog.

The pro-science narrative voice-over proceeded with its celebration of the advancement of science, accompanied by images of scientists and industrial manufacturing. In a voice-over, linked to images of atomic explosions, the narrative concludes:

And some of the greatest physicists in the world developed the atomic bomb, perhaps the ultimate symbol of science and progress. When the atomic bomb shined the light of reason on Japan, the war was over.

This final, horrific line is delivered – without emotion – by the digitally synthesized voice of the MacIntosh computer. The impassiveness of the artificial voice adds to the chilling impact of the statement and, by extension, poses a critique of the omniscient narrator's voice in conventional, expository documentary films. The detachment of *Terminal Time's* narrative voice also invites an ironic critique of the artificial intelligence apparatus as a means of transforming and recombining historical information. The computer faithfully delivers its programmed narrative without regard for the content of the story it tells. In light of the surfeit of computer

data, artificial intelligence represents the most likely hope for traversing and channeling the networks of databases promised by information industries. *Terminal Time* thus offers yet another – increasingly problematic – model for the “historian” as an artificial intelligence apparatus, which dispassionately traces associative threads within predetermined fields of possibility.

Overall, then, *Terminal Time* presents a three-pronged critique of documentary conventions, historical authorship and utopian discourses of interactivity. *Terminal Time* further suggests a radical conception of historiography as enabled by digital technology and the proliferation of narratives driven by the logic of databases and search engines rather than the codified conflict-resolution structure of most commercial cinema and mainstream documentary filmmaking. The possibilities for permutation and recombination of historical information created by the *Terminal Time* apparatus guide viewers to embrace a mode of history that thrives on mutability, multiplicity and chaos.

The ease with which *Terminal Time* mobilizes historiographical and documentary conventions in the interests of ideology and exploits the digital archive’s capacity for repetition and recombination usefully calls into question the epistemological premises that have guided debates over media and history during the past three decades. Significantly, *Terminal Time* offers a form of participatory history in which individuals and groups are positioned as possessing the potential to radically alter conceptions of the past. In addition to highlighting the inherently ideological and mutable nature of history, *Terminal Time* constitutes an unusually elaborate joke at the expense of historical documentary conventions. But it also poses a serious intervention in an entangled array of cultural discourses related to technology, corporatism and historiography.

¹ Arthur C. Danto, *Narration and Knowledge* (New York: Columbia University Press 1985) 155-159.

² Norman Klein, *The History of Forgetting: Los Angeles and the Erasure of Memory* (New York: Verso 1997) 16.

³ See Hayden White, *Tropics of Discourse* (Baltimore: Johns Hopkins University 1978).

⁴ See, for example, Brian Winston, *Technologies of Seeing* (London: British Film Institute 1997) or Jonathan Crary, *Techniques of the Observer* (Cambridge: MIT Press 1992).

⁵ For a glimpse of the way some historians have viewed computers as tools for communication, archiving and research, see the *AHA Perspectives* issue “New Technologies and the Practice of History” (February 1998).

⁶ Hal Foster, “The Archive Without Museums” *October* 77 (Summer 1996) 97.

⁷ Robert Rosenstone, *Visions of the Past* (Cambridge: Harvard University Press 1995) 206.

⁸ Vivian Sobchack, “History Happens” in Vivian Sobchack, ed., *The Persistence of History* (Los Angeles: American Film Institute 1996) 3.

⁹ Although it is beyond the scope of the present work to deal in greater depth with these ongoing struggles, their outcomes will doubtless prove crucial to the evolution and preservation of contemporary digital culture.

¹⁰ In fact, White’s point is that even the most disinterested chronicle reveals hints of narrative.

¹¹ The "Eine Kleine Frohike" episode of Fox's short-lived *X-Files* (Fox 1993-2002) spinoff, *The Lone Gunmen* (Fox 2001), which revolves around investigating the identity of a suspected Nazi war criminal offers a case in point. Additional examples of the close relation between computer geniuses and historical manipulation are evident in the television series, *Quantum Leap* (NBC 1989-93) and *Sliders* (Fox 1995-2000), among others.

¹² Rosenstone (1995) 24.

¹³ Dana Polan, "The Professors of History" in Sobchack, 251.

¹⁴ E.D. Hirsch, *Cultural Literacy: What Every American Needs to Know* (New York: Vintage 1988).

¹⁵ Rosenstone (1995) 199.

¹⁶ The film franchise was succeeded by the prequel TV series, *The Young Indiana Jones Chronicles* (ABC 1992-6).

¹⁷ The later film, *Indiana Jones and the Last Crusade* (1989), follows a nearly identical narrative to retrieve the Holy Grail.

¹⁸ *Raiders'* final shot is only partially comprehensible as an homage to the inconclusive investigation into the meaning of "Rosebud" in Orson Welles' *Citizen Kane* (1941).

¹⁹ The image of the impossibly comprehensive Federal archive also appears with some regularity within the paranoid narratives of the *X-Files*, where smallpox vaccination records secretly double as a genetic map of the world's population in preparation for alien invasion. Originating in the Cold War era, prior to effective computer based data management, such a total archive was only possible in the form of a massive, top secret government infrastructure, complete with armed guards and impossibly large document warehouses.

²⁰ So the story goes.

²¹ The videotaping continues at the time of this writing, though at a greatly reduced rate.

²² The final audiovisual display in the United States Holocaust Memorial Museum consists of talking head video projections of survivor testimonies (which may well have provided the stylistic impetus for Spielberg's project). The interviews are entirely unadorned and only minimally edited, deriving their power not from the use of iconic imagery but from the stark simplicity of facial expressions, gesture, and the emotional content of the testimony.

²³ The conventions of documentary editing dictate that an interview subject whose truthfulness is in doubt should be seen on camera, while those who speak in voice-over acquire a degree of authority from their omniscient speaking position.

²⁴ The goals of the *Survivors Project* are mirrored by the undertakings of numerous libraries, museums and historical societies, which are in the process of digitizing their holdings. One such endeavor is the *Virtual Memorial Project* <www.memorialweb.net>, which seeks to "enable creation of virtual archives based on documents existing in libraries, archives, museums, memorials, and public record offices." Their nascent project seeks to develop methods for digitizing, storing and retrieving documents from former Nazi concentration camp museums across Europe in order to create a total archive of genocide information.

²⁵ Studies of oral history and cultural memory have demonstrated that individual accounts of traumatic experiences in particular are not to be trusted as factual, even when they are relatively fresh in the speaker's memory. Vietnam veterans, for example, have reported discovering that their most vivid personal memories had become indistinguishable from the images and narratives of war films. See Marita Sturken, *Tangled Memories* (Berkeley: University of California Press 1997).

²⁶ Shoah Foundation literature puts the time required to watch the entire project at 13 years.

²⁷ Janet Murray, *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* (Cambridge: MIT Press 1997).

²⁸ Jorge Luis Borges, *Ficciones*, edited by John Sturrock (New York: Alfred A. Knopf 1993) 83-91.

²⁹ Michel Foucault, *Archaeology of Knowledge* (New York: Pantheon 1982) 5.

³⁰ *Ibid*, 31.

³¹ However, *Terminal Time's* creators note, even if an audience responded with identical responses to each question, the artificial intelligence algorithm would generate slightly varied historical accounts.