

DEMATERIALIZATION, MEDIA, AND MEMORY IN THE DIGITAL AGE

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On the 10th anniversary of 9/11, I explore the effects that the repeated broadcast of lossless imagery of the fall of the World Trade Center has on the individual and collective consciousness. I examine the relationship between the media industry's representation of events and personal and collective memories of events. I will also screen, *Rebirth*, my abstract 3D computer animation exploring my memories of the fall of the World Trade Center.

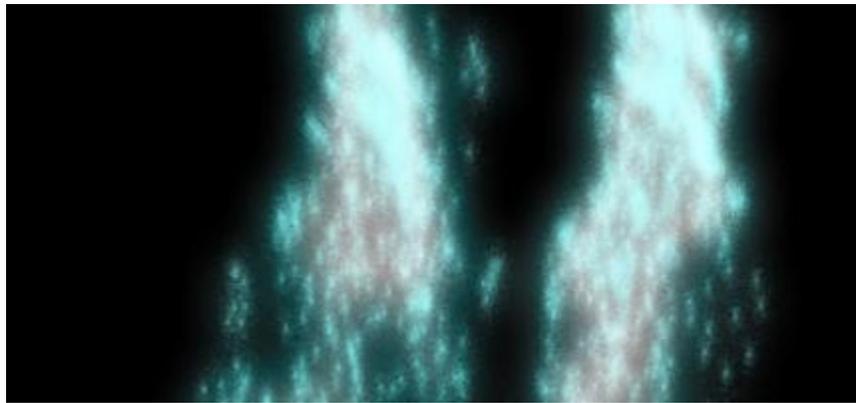


Fig 1. Digital still from Rebirth, 2006, David R. Burns, 3D computer animation, © 2006, David R. Burns.

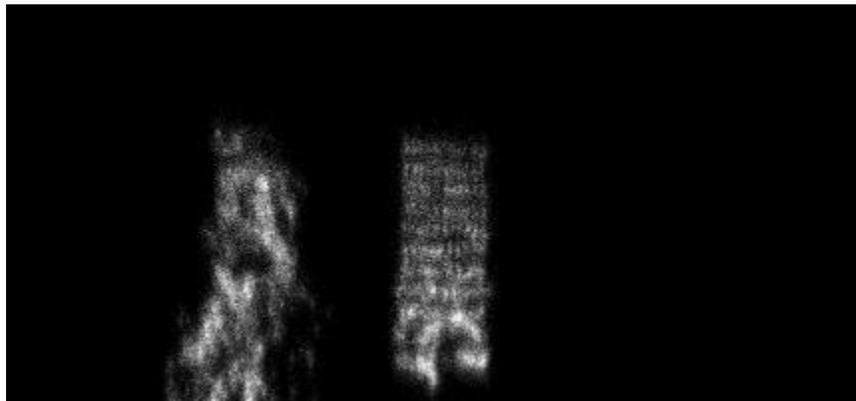


Fig 2. Digital still from Rebirth, 2006, David R. Burns, 3D computer animation, © 2006, David R. Burns.

Introduction

The ten-year anniversary of the September 11, 2001 terrorist attacks on the United States is an important milestone to reflect on those events and examine the media's influence in forming memories of what transpired that day. While several media outlets including Yahoo! News, [1] National Public Radio, [2] and CNN [3] are commemorating 9/11 in a journalistic context, my paper and 3D computer animation offer a personal remembrance of, and reflection on, the tragic events that took place on 9/11 in New York City. My paper explores the relationship between the media industry's representation of important events and our personal and collective memories of these events. The tenth anniversary of September 11, 2001 is a meaningful time to revisit a paradigm shift in the ways media are used to influence and mediate personal and collective memories.

September 11th 2001 was a perfect example of a paradigm shift in the way real-time memories are processed using digital media technology. On September 11th, U.S. civilians experienced an attack on U.S. soil via digital broadcast in real time as the events were unfolding outside their homes. This catastrophe was an example of a larger shift at the intersection of technology and memory. Digital media technology allowed viewers to experience events in real-time as never before possible on this grand scale because the archived digital recordings of memories did not dematerialize each time they were recalled. Instead, the digital memories remained intact and preserved, irrespective of the number of times the digital memories were replayed. The digital media technology used to record and recall the events were lossless and sharply contrasted with the older, lossy analog media technology traditionally used to record events. Archived memories that are stored on analog media such as film degrade over time much like the organic memories that we keep in our minds. Before exploring the dramatic effect of digital media technology on memory, it is helpful to examine Vannevar Bush and Nelson and Englebart's research using analog and digital media technology to mediate memories.

Background

Vannevar Bush's Memex machine and Ted Nelson and Doug Englebart's Xanadu artificial memory and information cataloging recollection system have explored the way memories are processed using media technology. Bush aimed to design a system that functioned similarly to the way natural memories are recalled in humans. He first outlined his concept in a 1945 Atlantic Monthly article titled, *As We May Think*. [4] While Bush's Memex machine was never actually built, he described an analog system of recording and accessing information on microfilm. His analog system could be linked to other archived data and linearly accessed using associative links. [5] Bush envisioned creating a tool that would connect society with memories and information so that individuals could better understand the human experience. Bush envisioned his Memex machine as an "extension of human memory." [6] Bush's work influenced Nelson and Englebart to develop a system called *Xanadu*. [7] In contrast to Bush's analog system of recollection with microfilm, Xanadu used digital hardware to archive and access information with digital hyperlinks to dynamically connect associations. [8] Compared to Bush's *Memex*, *Xanadu* was a more complex, dynamic, and interactive digital system for replicating human memory. [9] Bush's *Memex* machine used physical media -analog microfilm- mailed to colleagues to be added to other Memex machines' collections of information. *Xanadu's* "original hypertext model" [10] used digitized information that could be accessed in real-time using hyper-links across digital networks regardless of physical location. Bush's analog model took time for information to be delivered and processed by humans into memory. In contrast, Nelson and Englebart's *Xanadu* digital system provided real-time access to and mediation of memories.

Bush, Nelson and Englebart's work can also be used to examine the way analog and digital films can be used to archive and recall memories. In the past, memories were recorded using analog film and tape technology. The analog images and sound were representative of the original experience for the first several times that the analog media was played back. Over time, after the analog media was accessed several times, audio-visual information dematerialized and clarity became lost during the recall process. Because of the restrictions of older analog technology, memories that were captured using the analog process were also trapped in a linear method of recall. In contrast, digitally recorded memories are better able to retain the original clarity of the author's experience, due to the fact that digital images and sound can be copied and recalled infinitely without the loss of information or clarity of the memory being recalled. An additional benefit of digitally mediated memories is that they are better suited to be recalled on multiple delivery systems for greater ease of accessibility across geographies. Digitally mediated memories can also be experienced non-linearly, providing participants with greater accessibility for reconstructing and recalling memory information using multiple access points in a way that is most meaningful to them.

Personal Narrative

The ten-year anniversary of September 11, 2001 offers a unique opportunity to explore what can happen when a highly personal and collective event is recorded to the neuronal and digital memory systems:

Early on the morning of September 11th 2001, this author was still asleep in his cozy apartment in downtown Manhattan until being awoken by a phone call. I can still remember the phone conversation that jarred me out of bed. "Hello? What do you mean the WTC was attacked? Stop joking around. I am going back to bed! Turn on the TV? This isn't funny." To verify that this was just a bad joke my friend was playing on me, I turned on the TV to watch the news. There it was, playing back over and over again: a plane crashing into 1 WTC (World Trade Centre). In disbelief or shock maybe, I opened my window to stare downtown at the smoke that had by now begun to billow rapidly. This event was real! I was simultaneously watching 1 WTC burning both on TV and out of my living room window.

The feeling of watching in real time as the digitally represented WTC and the organic WTC burned on both the television set and outside my living room window seemed to put my immediate world on public display, as if I was now a part of the digital media being internationally broadcast across the world. I hadn't realized yet just how powerful this connection between myself and society was in the context of what I call, a "memory footprint." Instinctively, I grabbed my digital video camera and headed for the roof. I wasn't sure why I was doing this; I just knew that something tremendous was underway that would be deciphered later.

Once on the rooftop, I used my natural, organic eyes to view the natural images of 1 and 2 WTC billowing smoke. These images were burned in real time into my organic neuronal memory systems. Not fully comprehending what was unfolding before my natural input devices, I switched over to taping the event using a digital video recorder. Looking through the viewfinder, it became difficult for me to discern what was real and what was my memory of the earlier television broadcast. The feeling was very surreal. I had not yet processed the earlier TV images of the plane slamming into 1 WTC. Now as I looked through my digital video recorder's digital viewfinder, I found myself looking at a composition built of digital bits similar to the memory I had of the images that were represented as color pixels on TV. After staring through the viewfinder for a few minutes, my earlier memories that were recorded onto my natural

storage device, my brain, began to be processed by my consciousness. The realization that the memory of the event I had experienced was, in fact, still taking shape and form in real time was so intense and confusing that I had to pause the digital recording and look away from the camera's viewfinder. I was caught somehow in a real-time memory of great destruction, but that memory was not able to pass. The memory of watching the destruction of 1 WTC on television now merged into the real-time representation and memory of the destruction of both towers, 1 WTC and 2 WTC, that were in the process of being written to my analog neuronal memory systems.

I was processing with my natural eyes and brain and simultaneously recording discreetly on digital videotape. What was a natural observation? What part of my understanding came from the digital representation I had just seen? Confused, I looked through the digital viewfinder again. I needed to confirm that I was in fact physically and mentally cognizant, that I was indeed on the roof of my apartment building experiencing and memorializing a real-time event. I needed to make sure that I was not trapped in the confines of my living room and stuck in front of the TV set unable to differentiate what was real, what was recorded, and what was being digitally broadcast to society. I can only describe the feelings I had and the environment around me as chaos. It was as if I was trapped in a horrible film and everything that I watched through the camera's viewfinder made me a spectator of this horrible film.

Snap! I became aware of the real-time events unfolding again. Other people on the roof were shouting as something fell in the distance and more smoke billowed up into the sky. I turned and left the rooftop. Not sure what I was experiencing, I needed to sit down and process the events that had just unfolded before me. Later, I returned to the rooftop. There were many more people there now, and we were all witnessing the same event. However, something had changed. The skyline looked emptier. There was more smoke now and it was coming from the smaller buildings that surrounded 1 and 2 WTC. Again, on went the digital video recorder... An almost identical sequence of images to what I had seen earlier when 1 WTC and 2 WTC were burning was now being repeated multiple times as the rest of the WTC network of buildings, WTC 3, 4, 5, 6 and 7 began to plume smoke.

I wonder now, looking back at the time of that event and the several days following it, if the memories that I recall are my own. Have my own experiences of the event and memories of that morning recorded by my organic memory banks been replaced by the digital images broadcast on the TV repeatedly hour after hour for days and weeks on end? Is my memory of the events of that day more a composite of all of the digital images and analog stories recounted by my neighbors, colleagues and family that were in NYC that fateful day? I still have the digital video recording of that morning. Originally, when I came up with the idea for this project, I had thought that I would be strong enough to edit my digital video and transfer some of my digitally recorded memories to you today. It has been a decade since I put that digital videotape back in its case, but my organic memories have not yet faded enough for me to feel comfortable watching a digital, and therefore lossless representation of that day's events.

Rather than display the digital video footage that I recorded on 9/11, I will screen my 3D computer animation, *Rebirth*, that is representative of my memory of that day. *Rebirth* adds to the dialog and the process of individual recollection and memory of the tragic events of the destruction of the WTC on 9/11. *Rebirth* represents my memory of my personal experience. However, the audio-visual abstractions of the representations of the events on 9/11 contained in the animation are left open for audiences to interpret. It is my hope the audience will have a shared viewing experience in watching *Rebirth* that connects participants with a shared memory of an artist's renderings of the events of 9/11. Because the imagery is abstracted and there is no dialog in *Rebirth*, hopefully the audience will feel more liberated to

interpret and explore the imagery in the 3D animation. The viewing experience will then be archived into each individual's neuronal memories for later recall.

Conclusion

Ten years after 9/11, real-time events are more instantly accessible to influence collective memories than they were in 2001. Digital media technology has enabled more people than ever before to memorialize, archive, and access events and information in real-time. Digital media technologies that were unavailable a decade ago connect millions of people with each other's memories of important events in real-time and increase access to individual and collective memories. The global accessibility of high-speed Internet connections and mobile media networks have enabled individuals separated by great geographic distances to access individuals' representations of events and memories in real time. The instantaneous access to individual memory is shaping a collective global memory that is constantly updating and expanding.

The recent media coverage of Osama Bin Laden's death in 2011 is an example of the way digital media technologies that were unavailable a decade ago are now used to augment a collective global memory that is constantly updating and expanding. Osama Bin Laden's death saturated media beyond traditional forms of print, television and radio broadcast mass communication. News of Bin Laden's death immediately inundated social media and mobile media platforms including Twitter, Facebook as well as broadly accessible websites formatted for mobile phones. [11] In fact, the White House announced Osama's death with a tweet and a Facebook post immediately after President Obama's formal announcement of the event in his television address. [12]

The immediate access to real-time information is a further move on the paradigm shift in the way real-time memories are processed using digital media technology. Digital media technologies and social and mobile media platforms enable participants to experience events that inform their memories in real-time on a scale never before possible. Unlike the analog recordings that dematerialize over time, digital recordings of memories do not dematerialize each time they are replayed. Instead, digital memories remain intact and are preserved for later recall. The immediacy, permanency, and interactive qualities of digital mediated memories are transforming individuals' experiences with creating, accessing, and archiving memory on a global scale.

References and Notes:

1. YAHOO!, "9/11 REMEMBERED," April 20, 2011, <http://news.yahoo.com/september-11-anniversary-profiles> (accessed September 3, 2011).
2. NPR, "TRIBUTE CENTER," September 2, 2011, www.npr.org/2011/09/02/140134997/tribute-center-connects-sept-11s-emotional-threads (accessed September 3, 2011).
3. CNN, "AMERICA REMEMBERS," 2005, www.cnn.com/SPECIALS/2002/america.remembers (accessed September 03, 2011).
4. Vannevar Bush, "As We May Think," *The Atlantic* (July, 1945): 101-109.
5. James Nyce and Paul Kahn, "A Machine for the Mind," in *From Memex to Hypertext*, eds. James Nyce and Paul Kahn, 39-66 (London: Academic Press, 1991).
6. Chris Locke, "Digital Memory and the Problem of Forgetting," in *Memory and Methodology*, ed. Susannah Radstone, 25-36 (New York: Berg, 2000).
7. Ted Nelson, "As We Will Think," in *From Memex to Hypertext*, eds. James Nyce and Paul Kahn, 245-260 (London: Academic Press, 1991).
8. Tim Oren, "Memex: Getting Back on the Trail," in *From Memex to Hypertext*, eds. James Nyce and Paul Kahn, 319-338 (London: Academic Press, 1991).
9. Chris Locke, "Digital Memory and the Problem of Forgetting," in *Memory and Methodology*, ed. Susannah Radstone, 25-36 (New York: Berg, 2000).
10. Xanadu, "Original Hypertext," www.xanadu.com (accessed September 3, 2011).
11. Mashable!, "News of Osama," May 2, 2011, <http://mashable.com/2011/05/02/osama-death-twitter> (accessed September 5, 2011).
12. *Ibid.*