Web-Based Memorializing After September 11:

Toward a Conceptual Framework

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Abstract

Web-based memorializing is an emerging set of social practices mediated by computer networks, through which digital objects, structures, and spaces of commemoration are produced. Based on in-depth analysis of eight Web sites produced to memorialize victims of the terrorist attacks in the U.S. on September 11, 2001, we demonstrate that Web-based memorializing bears a diverse array of characteristics, only some of which are consistent with offline memorializing. Our analysis suggests that although Web sites produced by institutions or organizations may differ somewhat in form and content from those produced by individuals, public and private modes of memorializing observed offline are interpenetrated on the Web. Finally, we identify communal functions served and contributions to public memory made via Web-based memorializing, and propose a conceptual framework for use in future studies of Web-based memorializing practices.

Key Words

Web, memorializing, online memorializing, public memory

Introduction

Memorializing practices that follow major tragic events provide a transformational experience for the bereaved, the survivors, and others who are affected by loss. In the wake of events such as the Oklahoma City Bombing, the death of Diana, Princess of Wales, and the terrorist attacks on September 11, 2001, there has been widespread grief and loss, not only of the deceased, but also of a sense of national security and identity (Linenthal, 2001; Siegl & Foot, 2004; Walter, 1999). Acts of public grief and private mourning have provided opportunities to celebrate the lives of those who died, to mourn their passing, and to inscribe memories of the deceased in the public consciousness.

Commemoration of such losses often results in the production of artifacts and sites-- whether material or electronic-- in which competing narratives of an event come into play. These narratives reveal a tension between the need to find a common theme that unites those who are grieving in communal loss on one hand and the need to commemorate the uniqueness of an event and the individuals involved in it on the other. Memorializing fulfills a range of functions as well, such as mourning those who died, assuaging survivors' grief and guilt, communicating with other mourners in similar circumstances, and recognizing rescuers.

We view Web-based memorializing as an emerging set of social practices mediated by computer networks, through which digital objects, structures, and spaces of commemoration are produced. Our approach is consistent with the 'practice turn in contemporary theory' across the social sciences and humanities as described by Schatzki et al (Schatzki, Knorr Cetina, & von Savigny, 2001). In recent years, a number of scholars from different disciplines such as communication, sociology, anthropology, philosophy, and science studies have developed explanations of social and cultural phenomena based on the notion of practices (see, as examples, Nicolini et al (Nicolini, Gherardi, & Yanow, 2003) and the February, 2001, theme issue of *Communication Theory* on 'practical theory'). In this study we posit that Web practices, such as

Web-based memorializing, encompass the acts of making by which Web site producers create, appropriate, manipulate, link to and/or display digital objects that can be accessed by Web browsers. Awareness of the type of actor producing a memorial Web site, (e.g. an individual or institution), is foundational to understanding the practices of Web-based memorializing evidenced on the site because memorial Web sites are inscriptions, artifacts and structures which manifest their producers' actions, strategies, resources and societal roles. We also view memorial Web sites as surfaces on which sociopolitical and communicative action may be organized and inscribed dynamically by Web users besides the original site producer. In the wake of the terrorist attacks in the U.S. on September 11, 2001, hundreds if not thousands of Web sites were expanded or created expressly for the purpose of memorializing and commemorating the losses incurred (Foot & Schneider, 2004; Siegl & Foot, 2004).[1] The scope of memorializing on the Web following these events adds to a growing body of evidence indicating the increasing incorporation of the Internet into all realms of social, cultural and political activity (e.g. Howard & Jones, 2003; Wellman & Haythornthwaite, 2002).

Our overarching purposes in this study are to seek to fill gaps in current scholarship on Web-based memorializing by exploring the online modulation of public and private or vernacular modes of memorializing, and by developing a conceptual framework useful for studying practices in Web-based memorializing based on extant literature and close, comparative analysis of a small set of sites. By conceptual framework we mean a set of constructs derived through retroduction between ideas and evidence that can be employed in relation to each other in future studies for the purpose of theory building (Ragin, 1994; Sæther, 1998). Retroduction links inductive and deductive research processes and helps overcome the dualism between them. Retroductive analysis is a dynamic, evolving process of interaction between evidence-based images and theory-derived analytical frames which can be useful in developing empirically-grounded conceptual

representations, and thus in theory building. The research questions guiding our study are: 1.) What are the characteristics of Web-based memorializing activity? 2.) How is Web-based memorializing consistent with and divergent from what we term "offline" memorializing? And 3.) In what ways might the production practices inscribed in Web memorials produced by institutions or organizations differ from those produced by individuals?

Consideration of major themes in the research literature on memorials (c.f.Bodnar, 1992; Jorgenson-Earp & Lanzilotti, 1998; Linenthal, 2001), and preliminary analyses of sixty post-9/11 memorial sites indicated that it would be useful to begin our preliminary analysis by distinguishing sites principally by producer type or this comparative case study, we selected four sites for this study that were produced by individuals and four that were sponsored by institutions/organizations (selection criteria are detailed below). This distinction allows us to identify and compare a range of dimensions entailed in memorializing practices on the Web within and across these general categories of producer type, and to consider how Web-based memorializing corresponds with and diverges from modes of public or private offline memorializing as derived from extant literature. Although some memorializing practices we observed on Web sites produced by institutions and by individuals are somewhat consistent with anticipatable forms of public and private memorializing respectively, our data suggest significant interpenetration of these modes on the Web, and a broader and more complex array of memorializing practices across Web producer types than is addressed in extant literature on offline memorializing. For example, we found that some institutionally produced sites became venues for individual and seemingly private grieving, whereas some individually sponsored memorial sites were places where visitors mourned the collective losses resulting from September 11 events.

After reviewing key analytical concepts in the extant literature on memorializing, we identify salient characteristics of Web-based memorializing practices through narrative analysis of

Web-based memorializing on eight memorial sites produced in the aftermath of September 11, 2001. The descriptions we present for each site illustrate both notions of memorializing drawn from extant literature and facets that emerged in our comparative case study. We then propose a conceptual framework that could be employed in larger-scale studies of Web-based memorializing in the future, and assess the heuristic potential of the framework by mapping the eight sites within it. Our findings are suggestive of patterns that need further study but are not intended to be generalizeable. We conclude by drawing implications for future studies of Web memorializing, suggesting ways that our conceptual framework could be further developed.

Memorialization as a Contested Discursive Field

To establish a context for examining Web memorializing, we begin with a comparison between online and offline memorializing through discussion of some existing work on public and private memorializing. The relationship between public and private memorializing has functioned as a major issue explored by scholars studying this area of communication (Browne, 1995, Geser, 1998), and notions of public and private memorializing were 'sensitizing concepts' for this study (Strauss & Corbin, 1990). Bodnar (1992), in an historical study, considered tensions between public and private memorializing. During the late nineteenth and early twentieth centuries, public memorializing tended toward controlled, official, carefully planned forms of expression. During the post World War II period, however, living and vernacular memorials arose that broadened the memory work of memorialization (Shanken, 2002).

Bodnar (1992) viewed the tensions between public and vernacular memorializing as productive. For example, when forms of public memorialization are contested, such as in controversies surrounding the initial design for the Vietnam Veterans Memorial, and the subsequent addition of a heroic statue of three soldiers and an American flag standing opposite the wall of names, we can see the processes of contestation about the production and meaning of public

memorials at work (Bodnar, 1992; Carlson & Hocking, 1988; Martini, 2003). Architects of public memorials seek to frame the significance and meaning of the precipitating event for everyone, and furthermore construct their audiences largely as spectators and co-celebrants— but not as co-producers. The characteristics of public memorializing offline, then, grow out of its authorship, purpose, forms, and how its audiences are positioned to respond.

Vernacular memorializing is often manifested more immediately after the loss, and is unplanned in its inception. The practice of leaving objects at the Vietnam Veterans Memorial began soon after it was dedicated began in 1982 when the parents of a soldier left a worn pair of cowboy boots at the wall (Jorgenson-Earp & Lanzilotti, 1998). Subsequently, thousands of artifacts have been left at the memorial, including framed pictures, medals, artificial flowers, and messages. Studies of these objects, which are archived and cataloged by the National Park Service (Carlson & Hocking, 1988), indicate that some are brought to the site and appear carefully thought out, while others are left on the spur of the moment (Linenthal, 2001). The spontaneous appearance of personal objects at the Vietnam Veterans Memorial further illustrates the hybridity of some offline memorializing practices. Institutionally-sponsored memorials can become sites for individual, personal memorializing. These messages are left in a public space, and in some cases are collected, archived and indexed, resulting in a public montage of private messages. Conversely, online sites memorializing individuals such as Matthew Shepard or victims of the Columbine shootings have been appropriated for public protest and expression.

Published studies of message content indicate that objects in material form may be addressed to the deceased, (e.g. 'I'm sorry Frankie--I know we left you--I hope you didn't suffer too much' [Carlson and Hocking, 1988, p. 212]).One might argue that the most purely private memorial message is one that is one written by the bereaved to the deceased that no one else is supposed to see. A second audience for private messages at the Vietnam Veterans memorial are its visitors, who

leave messages about the deceased, or about the events pertinent to the writer's experiences and the

memorial occasion but addressed to other visitors, as in the following:

> Whenever you start losing a grip/Remember them guys/Remember those promises/Even if
>
> that's the only thing/You stay alive for…. (quoted in Carlson & Hocking, 1988, p. 208).

A third audience for such messages are those who might have known the deceased or who can

provide some help in making connections with others. Martini's study (Martini, 2003) of the Virtual

Walls for Vietnam veterans emphasizes the importance of messages that seek to contact the families

and friends as being communal in nature and as using memorials in ways for which official, public

memorials are not designed.

Three other potential audiences for messages of memorialization include survivors of the

attack/tragedy, rescuers (whether living or deceased), and those who were affected by the tragedy

personally, whether directly, indirectly or vicariously. As Des Pres observes, 'Thanks to the

technological expansion of consciousness… what others suffer, we behold' (quoted in Hartman,

1995, p. 78).   Authors who have focused on vernacular memorials have emphasized the functions

that individual expressions of loss and grief serve for their authors and those with whom they

communicate. Such expression helps the bereaved to express their grief and to move through the

stages of bereavement (Siegl & Foot, 2004). When the lives of ordinary, private citizens are

suddenly lost in a traumatic event, there is a deep need to protest against the anonymity of mass

death by bringing into public view the lives and experiences of the deceased (Linenthal, 2001).

An Analog to 9/11: Commemoration after the Oklahoma City Bombing

The nature of the events of September 11, 2001 evoked some patterns of expression

resembling those in the aftermath of any major crisis where lives are lost and people are

traumatized. At the same time, it produced exigencies for social support and forms of bereavement

unlike any situation that preceded it. Its uniqueness might best be understood by comparison to an

event similar to it -- the bombing of a federal office building, the Murrah Building, in the United States in April 1995.

In this devastating event, 168 adults and children were killed and 850 people were injured. Thousands of rescuers and survivors came into contact with the site and with its carnage. The images of the crumbling building, the dead children from its day care center, and the devastation in downtown Oklahoma City, OK were seared through television coverage into the American public mind. As with the victims of the September 11 attacks, the people in the bombed building were ordinary people in their ordinary daily routine, and those who perished vanished from their loved ones' lives in an instant.

Immediately after the bombing, spontaneous memorials sprang up in front of the office building, and at a corner a few blocks away. The latter became a site of pilgrimage for families and visitors where remembrances were left. A chain link fence that was built around the site of the building became a repository for flags, toys, messages, flowers, teddy bears, crosses, photographs and hundreds of items left by visitors over a period of years. Like the objects left at the Vietnam Veterans Memorial, these objects were saved and archived (Linenthal, 2001).

Linenthal (2001) also describes a sense of personal loss that stands alongside the grieving for lives lost in the disaster. Life after the bombing was experienced by most of the city's residents as qualitatively different that which preceded it. 'Social suffering,' Linenthal observes, 'is more than a problem of repressed and parasitic memories that haunt individuals; it is also evidence of what was widely felt as the traumatic loss of a particular way of being in the world' (p. 93). People grieved over the loss of their lives as lived before the disaster and 'over the symbolic loss of a city and an America that was no more . . . The bombing was perceived to have destroyed an era of innocence, and people grieved over its passing' (93). Linenthal concludes that the intense,

nationwide outpouring of grief and condolence in the aftermath of the bombing was a means of engagement for the wider imagined bereaved community (Anderson, 1991).

In their study of vernacular memorialization at the site of the blast, Jorgenson-Earp and Lanzilotti (Jorgenson-Earp & Lanzilotti, 1998) emphasize the importance of the fence at the site as a place of mourning. Going to the site takes the form of a pilgrimage. They quote one mother who lost a child in the bombing who said 'I just have to go sometimes even though it brings me to tears standing there knowing that's where my daughter was' (p.159). In the aftermath of the September 11 terrorist attacks, some forms of mourning and honoring the dead were not possible. In New York City, at the Pentagon, and in Pennsylvania, events were so destructive as to make it nearly impossible in the near term for families to go through anything resembling customary processes of memorialization or burial. The devastation was so complete and the remnants so toxic that the World Trade Center, Pentagon, and Pennsylvania crash sites could not be approached, and bodies could be recovered, (if they were recoverable at all), only after a time and with great difficulty. For most Americans, the only available public evidences of the devastation were the media images of explosions, fires, and collapsing towers.

The World Wide Web as Site/Surface for Memorializing

In the immediate aftermath of a large-scale public tragedy or natural disaster such as the September 11, 2001 attacks or the Indian Ocean tsunami in December, 2004, the Web offers a widely accessible site and 'surface' (Taylor & Every, 2000) for spontaneous personal and public expressions of grief and loss, as well as other forms of socio-political action (Foot & Schneider, 2004; Siegl & Foot, 2004). Over the longer term of weeks, months and years, it may also become a discursive space to memorialize those who perished and to design and articulate tributes to them. In his study of Web site memorials, Geser (Geser, 1998) noted that, in the absence of a body and a

gravesite, the Web offers a place where one can erect a memorial as a site of expression for friends and family of the deceased.

The Web offers a communication environment in which individuals and networks of individuals can quickly mount sites that are themselves ' "open documents" inviting an unspecified range of visitors (in fact: anybody) to add something of their own' (Geser, 1998, section 3, par. 7). Co-production, defined as creating something jointly, denotes the joint production of Web-accessible digital materials by disparate actors (Foot & Schneider, 2002). In Web-based memorializing, the practice of co-production may be manifested in the appropriation of content by a site producer from external sources, or through contributions of content in forms such as postings on a message board or stories that have been submitted to the site producer (Schneider & Dougherty, 2003). Similarly, co-production may be evident in features such as a photo gallery or victims' database, or through links between sites.

In contrast with gravesites, obituaries, and memorial services, Web memorials may provide more opportunities for change and development over time. Immediately after the event, they may serve as organizing surfaces for making arrangements, notifying those interested about offline memorials, and channeling assistance. As time passes, memorial Web sites may also become enduring records of a person's life, actions, and contributions. Because of its potential for easy storage and reproduction of design, images, and texts, the Web also enhances opportunities for expressing subjective thoughts and emotions that can then be communicated in ways not possible in mass media environments.

In the public domain, Web memorials have the potential for becoming living public memorials. They can record specific events and actions by rescuers and volunteers immediately after the event. They can also become sites of interest for a general public who seeks public memorialization of the event as a whole. Web-based public memorials often display the same

characteristics seen in offline public commemorative sites-- imposed uniformity of expression, limitations on what can be said, and the sort of fixity that accompanies officially planned memorials.

In his study of 'cybermemorials'--two Virtual Walls that correspond to or complement the Vietnam Veterans Memorial-- Martini (Martini, 2003) describes other benefits of online memorializing. Like Geser (1998), he emphasizes the flexibility of expression in a Web environment where authors can use multimedia, Flash, and other Web applications to provide virtual displays of remembrance and where expression is unconstrained by the limitations of traditional media. Martini also discusses the convenience of Web access, where visitors can come to the site while in their own homes, leave messages and remembrances, and find and express social support. Interestingly, Martini notes that the flexibility of hypertext itself facilitates expression. Whereas the granite wall of the Vietnam Veterans Memorial displays the names in chronological order, visitors to one of the Virtual Walls can view the names alphabetically, chronologically, by state, or by panel number. Furthermore, since each name is a hyperlink, visitors can also find out more information about the individual (in cases where more information is available) by opening the link. Thus, the variability, modularity, and flexibility of Web technologies afford users many more options for receiving (and producing) messages than they would have in more static media environments. However, the artifacts created by either offline or online memorializing are simultaneously durable and fragile in different ways. Material monuments may be built to withstand the elements, but can erode, and their surfaces can be defaced or destroyed entirely. Virtual memorials, to endure on the Web, require the maintenance of a domain registration and a server, regular backups on evolving storage media, and occasional migration between platforms.

Site Selection and Method of Analysis

Previous studies of Web memorials have not thus far generated a conceptual framework for comparing various modes of Web-based memorializing. We designed this study to serve as a springboard from previous single case studies to potential large-scale studies of Web-based memorializing, by developing a conceptual framework grounded in both literature and empirical observations that could be employed in future studies of larger datasets. In order to develop a conceptual framework, we conducted an in-depth comparative case study of a small number of cases to allow for the emergence of analytical dimensions for a conceptual framework that could not be derived from literature review alone—since the phenomenon of Web-based memorializing is relatively recent and evolving.[2] Our presentation of the framework follows the descriptive presentation of the cases, because it emerged from examination of the cases in view of a set of sensitizing concepts drawn from the extant literature.

To familiarize ourselves with Web-based memorializing we first examined over sixty sites produced in response to the events of September 11, 2001, which we had identified in previous studies as having provided some form of commemoration (Foot and Schneider, 2004, Siegl and Foot, 2004). In order to identify characteristics of Web-based memorializing and to develop a conceptual framework, we then selected a small set of sites to analyze closely. Based on extant literature and this in-depth analysis, seven dimensions emerged by which patterns in the characteristics of Web-based memorializing on different kinds of sites can be considered. These dimensions, listed briefly here and elaborated further below, are: 1.) object/focus of commemoration; 2.) co-production; 3.) voice; 4.) immediacy; 5.) fixity; 6.) intended audience; and 7.) relational positioning of victims.

We selected eight Web sites, a manageable number of cases for in-depth analysis, based on their producer type (institutions/organizations or individuals), and the range of memorializing

practices observable on them, since our goal was to develop a conceptual framework reflecting the diversity of aspects of Web-based memorializing.[3] The four sites produced (i.e. sponsored) by institutions or organizations and selected for in-depth analysis were labeled as sponsored by: 1.) the New York City Police Department; 2.) the National Park Service; 3.) The Association of Flight Attendants; 4.) Cantor Fitzgerald. Two of these producers are government entities, one is a trade association, and the fourth is a corporation. The other four sites were produced by individuals and do not present any formal association with an official government or corporate body. The titles of the sites in this second set are: 1.) World Trade Center and Pentagon Memorial; 2.) September 11, 2001 Victims; 3.) The Port Authority Police Memorial; and 4.) Memorial Site for Neilie Anne Heffernan Casey.

The eight sites selected for in-depth analysis manifest inscriptions of an array of memorializing practices that seemed suggestive of the range of post-9/11 Web-based memorializing. We did not attempt to generalize from these particular sites to a general class of sites; rather we analyzed these sites retroductively with our emerging conceptual framework to identify and categorize practices entailed in the production of Web-based memorializing. Seeking a variety of sites in order to identify a range of Web-memorializing practices, we employed site size, complexity, types of features and range of external links as selection criteria, in addition to producer type. For example, the memorializing sites produced by the Association of Flight Attendants and the New York City Police Department are small, simple, and host a limited array of features and external links,   whereas the Cantor Families Memorial and the World Trade Center and Pentagon Memorial sites are fairly large, complex and robust. Six of the sites were produced within weeks of September 11, 2001, and captured in the September 11 Web Archive[4]; two sites were produced sometime after the September 11 Web Archive collection closed in December, 2001. For the former six, this analysis is based on the earliest available archival impression of each site, and the version

of the site that was available "live" on the Web in July, 2003. For the latter two, the analysis is based solely on the July, 2003, site versions. Archival and live URLs are presented in the endnote associated with each site title. In the following section, descriptions of the memorializing practices on each site are presented beginning with those found on sites produced by government/corporate entities and concluding with those found on sites produced by individuals or groups of individuals.

Memorializing on Institutionally Produced Sites

New York City Police Department[5]

The first Web site we analyzed is the memorial section of the larger New York City Police Department site at a nyc.gov address. The front-page displays photographs of the 22 male and 1 female officers who died in the World Trade Center on September 11. It includes a statement by Police Commissioner Bernard Kerik to his officers shortly after the terrorist attack. The notice below his statement informs the reader that all of the officers were awarded the Medal of Honor posthumously on December 4, 2001.

The Department's Web-based commemoration of the 23 fallen officers is confined to three pages, emphasizing themes of heroism, patriotism, and devotion to duty-- but the commemoration of the officers is limited to displaying their photographs, names, and the type of medal they were awarded. No further comments about the officers' lives or actions are included. The expression on these pages seems carefully constrained and univocal in nature.

National Park Service[6]

Following the September 11 terrorist attacks, the U.S. National Park Service (NPS), the federal agency tasked with running the national parks, monuments, historic sites and the like, initiated a "Memorial Group." The Group was charged with the tasks of collecting oral histories from NPS personnel about their experiences at the time of the attacks, providing parks visitors with

an opportunity to share their experiences and to contribute to planning for the memorials, and developing 9/11 program planning. A Web site entitled "National Park Service: 9.11.01 Remembrance," was an outcome of the Group's work. The Web site serves as a public commemoration of the unique perspective of the NPS on the terrorist attacks. One purpose of the site, as identified in the director's message, is to "inspire thoughtful reflection" about the impact and meaning of September 11.[7] The site is well-planned and designed, and is presented as though it were a permanent part of the National Park Service Web presence. Its content appears to be relatively fixed; those parts of the site that could be updated, such as the "remembrances" section described below, appear to be unchanged for months at a time. The intended audience for the site seems to be a general one – those interested in the Parks or Park Service; employees and associates of Park Service employees; and those interested in the Park Service role in planning and developing (offline) memorials to the victims of the attacks. The site focuses on the reaction of the Park Service – as first responders to the attacks, as the continuing stewards and guardians of National cultural treasures, and as participants in the process of constructing physical, public memorials of the attacks.

The site is multi-vocal, reflecting the voices of NPS employees – through oral histories and incident reports contributed by witnesses and first responders, and through descriptive articles written by NPS public affairs officers. One of the NPS sites in New York is Federal Hall, located a few blocks from the World Trade Center. Oral histories are presented from a variety of NPS employees, including officers in the National Park Police, whose responsibilities included patrolling airspace in Washington, DC immediately after the attack on the Pentagon, and evacuating high-level federal officials from the capitol city.[8]

Association of Flight Attendants[9]

Among the many victims of the September 11 attacks were 25 flight attendants serving on the four

hijacked planes. The Association of Flight Attendants (AFA), a union representing flight attendants

employed by 26 airlines in the United States, created an online memorial to its members who died

in the attacks as part of its Web site. The memorial is linked from the organization's front page

with a text link, "In Memorium," without referencing the September 11 incidents.

The heading across the top of the memorial's front page includes the text "In Memorium"

with a panel of four images of the American flag. The names of the four flights that were hijacked

on September 11 are listed on the left; clicking on the links displays pictures and names of the flight

attendants who died on each of the four flights. The names of the flight attendants are links to pop-

up windows, each of which display an obituary, including text and a photograph, about the

individual. There is no opportunity to add material to the memorial, and its content appears to be

fixed and relatively permanent. Most obituaries include some quotes from family members or

friends, though neither the authors of the obituaries nor the sources of the material about each flight

attendant are stated.

Though the obituaries reference the terrorist attacks directly, the general memorializing text

does not. However, flight attendants who died on other flights – such as those who died in the

November, 2001 crash of American Airlines flight 587 in New York– are not memorialized on the

AFA site, indicating that this memorial is intended as a remembrance of those who died in the

terrorist attacks.

The Cantor Families Memorial Site[10]

On September 11, 658 of the 1,000 New York employees of Cantor Fitzgerald and its

subsidiaries were killed. In an attempt to commemorate their loss, the firm founded the Cantor

Families Memorial Web site. The site is simply and elegantly designed. The tribute pages are

organized alphabetically, and each individual tribute page is formatted in the same way, with a

photograph of the deceased, a link where one can bookmark the page, a leading tribute, usually

written by a close family member, and then a series of tributes by other individuals. This site is a

remarkable example of individual memorializing on a corporately-produced site. We include

several excerpts from tributes on this site as examples of the pathos expressed on its pages and on

other memorial sites as well.

The careful planning of the Cantor Fitzgerald site as a structure for meaningful tributes is

shown in the following notice displayed on all tribute pages: 'If you know this employee, we invite

you to add a tribute of your own to this page. All submissions will be reviewed by our

administrator prior to being posted. Please limit your tribute to 100 words and be sure to check

your spelling as tributes are posted as submitted.'[11] These statements are followed by some specific

instructions about how to format the tribute text. This notice implies a number of constraints on

what can be said and who can say it. Only family members, coworkers, and friends of the deceased

are invited to contribute; the length of their contributions is limited; and the content will be screened

by a site moderator, although not copy-edited.

In this case, a corporation provided a framework or surface for memorializing, but all of the

content on the tribute pages was intended to be contributed by family/friends of deceased, or in

some cases coworkers and acquaintances. Although the site moderator did allow some postings by

people who did not know the deceased, these are exceptions to the posted rule. The content of the

site is quite varied, but expressions of personal grief regarding the loss of one or more individuals

are dominant, as opposed to abstract loss, or grief in general.

 These guidelines for contributions provided by Cantor illustrate important features of

public, corporate discourse that constrain expression. The tensions between planned, corporately

produced memorializing and individual expression become very clear when one begins to read the

postings, however. In the end, many individuals who visited the site and were moved by it sent in tributes based on what they read about the person. In some cases, these postings by strangers were placed on the site. Many of the tributes are more than 100 words, indicating that the site moderator(s) believed that the full texts merited posting, or ceased actively moderating the site.

Despite its characteristics as a planned corporate site, the Cantor Families site is significant as an exemplar of the both the Web's potential and shortcomings for individuals' expression of private emotion. The "Add a Family Member" link stipulates that only next of kin family members can create a page for a victim, and only 339 of the 658 employees have tribute pages. It could be that some families were unable or reluctant to submit a private expression of grief to this Web site. Some of the pages were created initially by friends, and family members added their thoughts and feelings later on.

Many of these tributes are wrenching expressions of grief and loss. In reading them, the visitor forms an idea of the person's life and experience and what his or her life and works meant to friends and family. Some family members post once, and then, feeling that they need to say more, post again. Some contributors write about the deceased in third person; many others address the deceased directly. For example, Jason Cayne, a partner/broker in the Municipal Bonds Department left a wife and three daughters. His tribute is written by a family friend, but the sixth submitted message is by his wife, who says:

> Jake, it is so hard to sit next to this computer and write something to you or for you. What can I possible say to the only man I ever loved in my life? I have spent almost everyday with you for the past 15 years and to think we are only 30 that is scary. I love you more than I will ever be able to love anyone again. I miss you every second of the day. I think about you every second of the day and I just want you back every second of the day. For now all I

can get myself to say is how much I love and miss you. Gina and Jake forever and always.

I will keep on loving you baby. Love, your wife Gina.

In tribute after tribute, one finds a depth of feeling, along with efforts to commemorate the

individual as a unique and special person. For family and friends, posting a tribute to this site is

itself a pilgrimage. For many, it is not easy to do; it requires thought, as well as the will to express

private grief in a public venue. But years from now, this may be one place that people come to

remember the deceased and to revisit what he or she meant to others.

In summary, the Cantor Families Memorial is a broadly co-produced, dynamic yet enduring

site that is likely to be maintained and visited into the indefinite future. It thus represents

capabilities of the Web that are not possible in the sited gravestone to which one has to travel to

physically, the univocal obituary, or the formal eulogy. Of the four sites produced by institutions

and/or organizations in this analysis, the Cantor Families site is unique in the level and range of

individual, vernacular memorializing it enables. The forms of bereavement and commemorative

expression manifested on this site are consonant with those on 'unofficial' sites produced by

individuals, as we discuss in the next section.

Memorializing on Individually Produced Sites

World Trade Center and Pentagon Memorial[12]

This site was posted immediately after the disaster (the domain was registered on September

11, 2001), with the primary purpose of commemorating those who died. It was jointly produced by

a group of collaborating individuals. The function of the World Trade Center and Pentagon

Memorial site is made clear by the pattern of external and internal links on the site. External links

include "Submissions" (to a companion clearinghouse site for contributed poetry, pictures, music

and other material) and "Missing Persons" (to a CNN site that links to a roster of those confirmed dead or missing). Internal links function primarily to list and describe the identities of the deceased.

The text on the home page notes that the site is intended to remember and honor the lives of those who died on September 11. Image links on the left navigation bar take the visitor to the City of New York Fire and Police Department and Port Authority memorials. On the right side of the home page are links to give blood and to help families of the deceased.

Among other internal links to agencies and personnel affected by the attacks is an 'Airlines Memorial' link that displays rosters of passengers on each of the four flights-- United Airlines 175, United Airlines 93, American Airlines 77, and American Airlines 11. For each of these, lists of the crew and passengers are included. Those listed are variously identified, presumably because all the information was not available. Some are identified only by name, others by name, age, and hometown, and still others by position held and reason for making the trip.

A very interesting aspect of this page is that at the bottom there is as complete an account as possible of what happened on United Airlines Flight 93 that crashed in Pennsylvania. This account seems to have been put together based on phone calls made by passengers to their families and others before the group of men on board took on the hijackers. Whether this information was assembled by site creators or appropriated from some other source is not clear.

On the whole, this site seems somewhat impersonal; references to the victims give no indication that the site producers knew any of them personally. Its content is comprised of the thoughts and feelings of users who were deeply disturbed by the terrorist attacks and wanted to express their sorrow and (in some cases) their anger. Many of the poems and thoughts are addressed to victims of the attacks in various categories--citizens, military personnel, rescuers, and volunteers. The messages are sympathetic, but they are addressed to a "generalized other." During the period of shock and dismay in autumn 2001, a site such as this may have fulfilled informational

functions regarding who died and under what circumstances. It may also have served as a means for Web users to engage a broad imagined community throughout the United States in a form of communal grief.

September 11, 2001 Victims[13]

The September 11, 2001 Victims Web memorial is a vernacular site "dedicated to the victims of the September 11, 2001 tragedy." Produced by a computer scientist, the centerpiece of the site is a continuously updated database of victims, with individual-level records for each of nearly 3,000 individuals. In addition, the site serves as the marketing vehicle for a poster depicting the World Trade Center towers with images of the victims incorporated into the poster,[14] and provides links to other memorials and sites about the September 11 terrorist attacks.

Records in the database of victims include the victim's name, age, residence, profession, and location at time of tragedy. Most records also include a photograph of the victim, watermarked with a www.september11victims.org designation. Very little information about the victims individually is provided. The database is searchable by last name of the victim. Summary statistics are provided about the victims, listing the number of victims by country and by citizenship. In addition, statistics of victims at the World Trade Center indicating demographics and numbers of identified victims are provided.

An important component of the site is the bulletin board of comments about each of the victims. A feature on the front page of the site identifies "Recent Comments".[15] A note to site visitors interested in leaving memorial messages indicates that messages are examined prior to posting. Mass posting of identical messages associated with multiple victims is explicitly discouraged; the attempt is to create a space for those who personally knew the victims to add comments or thoughts to the Web site. However, unlike the Cantor Families site or, to a certain extent, the Port Authority Memorial site, there seems to be no attempt to verify the information

being submitted. For example, an examination of the tributes to some of the victims include

postings by those identifying themselves as children of the victims, but with names that do not

match any of those identified in obituaries published by professional press organizations.

One of the most interesting components of the site is the explicit invitation to other site

producers to co-produce Web sites with the producer of september11victims.com. On a

"SUPPORT US" page,[16] two sets of javascript code are provided. The intention is that producers of

other Web sites would copy the code into their sites, creating a dynamic link to the

september11victims.org site.   The first code produces an automatically updated graphic with the

statistics and links to the september11victims.org site; the graphic lists the number of confirmed

dead, reported dead and reported missing from the terrorist attacks. The second code creates a

scrollable, clickable list of victims. The second code is, in essence, a "portable" memorial that can

be created by any Web producer, with the technical and back-end database support provided by

september11victims.com.

Though few sites appear to be taking advantage of the invitation to co-produce memorials

with september11victims.com, there is evidence that its data is being appropriated somewhat

frequently. For example, the World Trade Center Memorial Wall site[17] lists the names of victims in

identical format to the september11victims.com site. This vernacular, individually-produced site

also serves as a source for at least one public, official Web site: The White House Commission on

Remembrance references september11victims.com for its presentation of the number and names of

victims at the World Trade Center.[18]

This site is notable for its lack of professional production values, and in some ways, for its

lack of solemnity. Compared to other sites examined in this analysis, the information is presented

without any of the subtleties or euphemisms usually associated with memorials. Straightforward

language (e.g. 'confirmed dead') and statistical presentations of victims are its hallmarks.

Port Authority Police Memorial[19]

The Port Authority Police Memorial is a vernacular memorial site created by a retired member of the Port Authority police, in distinction from the memorial page on the official site of the Port Authority Police Department.[20] The site, though produced by an individual, is presented as though it were an official Web site of the Port Authority. It also resembles the official memorial on the New York City Police Department Web memorial page, and includes individual tributes to the fallen officers. Included on the front page of the site is a graphic representation of the official 'Port Authority Police Department' insignia; the title of the site is 'the' Port Authority Police Memorial.

This vernacular site is dedicated to the memory of the 37 Port Authority police officers who died at the World Trade Center in the September 11 attacks. The site includes tributes to each individual officer, background information about the attacks and the Port Authority police department, and information about survivor relief funds. From the front page of the site, visitors are presented with an opportunity to "enter" the memorial. The use of the word "enter" indicates an attempt to set aside a particular space for memorializing that is distinct from the rest of the site. In this way, the memorial and the remainder of the site are conceptualized as at least two separate places. Correspondingly, a separate section is used as a memorial to Sirius, the K9 dog who died in the aftermath of the attacks.

The front page of the Memorial is formal and the content appears fixed.[21] The pictures to the officers are presented sorted by rank, and then within rank, alphabetically. The name of each officer is prefixed by a formal rank. All of the photographs show the officers in uniform, with a nearly identical background, suggesting that these are official or institutional photographs. The Memorial page carries the label 'Rest in Peace' below the site navigation banner. Each officer's name is linked to a memorial page dedicated to the individual. Individual officers' pages provide links to press clippings, tributes that were submitted on the site, and memorial foundation

information. All officers have press clippings; not all officers have tributes; relatively few have memorial foundation information. The site offers an opportunity to submit a remembrance about a specific officer, or a general tribute, to be posted to either the site or the memorial. Many of the tributes posted appear to be from family or friends who knew those memorialized by the site.

The site offers an unusual form of co-production. As indicated above, each officer's page includes press clippings. The "baseline" content for the press clippings pages are scanned printouts from the Web version of the *New York Times* 'Portraits of Grief' section.[22] This represents an interesting method of content appropriation not often found on the Web; rather than make an electronic copy of the material, the material was printed and then scanned.

Memorial Site for Neilie Anne Heffernan Casey[23]

Neilie Casey, a 32-year-old mother of a 7-month-old baby daughter, was on American Airlines Flight 11 to Los Angeles on September 11. Messages to the site's condolence book described her as a very positive, energetic person. Former classmates from her high school in Florida and Babson College as well as former fellow workers from a job in San Francisco described her as a compassionate, kind, and much loved person. This memorial site was posted within days after Neilie's death, as evidenced by the announcement on the front page of an early version of the site of a memorial service to be held on September 22, 2001.[24] It seems to have been created by her husband, Mike Casey, although that is not made explicit. The Memorial Service link contained a detailed obituary for Neilie and also the full text of Mr. Casey's tribute to his wife given at the funeral. This site is characterized by an evolution in characteristics of private and public sites.

This site was created rather spontaneously at first, and the personal nature of the information provided initially suggests that the audience imagined by its creator(s) were Neilie's family and

close friends. It was originally intended to commemorate Neilie's life and character and to mediate expressions of grief, sympathy and support from those acquainted with Neilie and her family. The early versions of the site are somehow intimate; for one who was not personally acquainted with Neilie, visiting this site in September, 2001, felt a bit voyeuristic.

The site developed over time, and as of June, 2003 was still fully functional on the Web. Nearly two years after Neilie's death, the site contained features that provided visitors with an opportunity to donate to a trust fund for Riley Casey, Neilie's daughter, and also to write letters to Riley about her mother. Its intended audience changed over time, beginning with friends and family early on, and then appealing to parents with young children, people with similar interests to the Caseys, and frequent accidental visitors.

The site invites its visitors to contribute to a guest book, which contained hundreds condolence messages at the time of this study. Messages to the guest book are posted in reverse chronological order, with the most recent first and the oldest last in order. If one reads them from the end back to the beginning, a change is apparent. The oldest messages are from friends and family, many of whom attended the memorial service. Later on, one notices that people sought the site out, having read about it or heard about it from friends. Some of the posters stumbled on the site accidentally; others return regularly. The contents of its message board are similar to the condolence books written for Princess Diana by mourners after her death (Jones, 1999).

Toward A Conceptual Framework

As discussed previously, in extant studies of offline memorializing there is a well-established distinction between public and private memorializing that generally corresponds with memorials produced by institutions versus individuals. Through our analysis of memorializing practices on the eight post-September 11 Web sites described above, we found that this distinction goes through intriguing permutations on the Web. We also discovered other aspects of

memorializing that we suggest may be more salient to studies of Web-based memorializing. In this section we elaborate the seven dimensions that emerged through our analysis of extant literature and post-9/11 sites, by which patterns in the characteristics of Web-based memorializing can be considered across sites produced by institutions or organizations and individuals. The dimensions we propose as a conceptual framework are: 1.) object/focus of commemoration; 2.) co-production; 3.) voice; 4.) immediacy; 5.) fixity; 6.) intended audience; and 7.) relational positioning of victims. Although these dimensions are by no means comprehensive, they form a heuristic of characteristics by which Web memorials can be analyzed systematically and comparatively. In addition, these dimensions could be useful in comparing online memorializing with offline memorializing. We describe each of these dimensions in terms of the analytical questions that can be used to explore them. As an initial step toward operationalizing these dimensions, we suggest a set of variants for each dimension, and map the presence of these variants across the eight sites analyzed above based on the memorializing practices observed on each site.

1. What is the object or focus of commemoration?

    Does the memorializing focus on the loss or remembrance of something abstract and/or general, and/or collective (e.g. loss of security, remembrance of heroism) or on something concrete, specific, and/or personal (e.g. loss of individuals' lives)? In the wake of the September 11 attacks, as in the aftermath of the Oklahoma City bombing, interplay between memorializing abstract losses and personal, specific losses was evident in many ways. For instance, the World Trade Center Memorial commemorated abstract losses and heroism whereas the Neilie Casey site memorialized an individual life. In contrast to both of those, the New York Police Department memorial site commemorated both officers killed in the line of duty and heroism in general.

2. Is there any evidence of co-production?

Is the memorial produced entirely by one individual or organization, or is there evidence of a co-productive process between actors who are independent organizationally from each other?[25] Although some forms of co-production of Web sites may be invisible to site visitors, other forms may be manifested in the appropriation of content by the site producer from external sources, (e.g. on the Port Authority Police Memorial site), through contributions of content in forms such as postings on a message board (e.g. the Neilie Casey site) or stories that have been submitted to the site producer (e.g. the National Park Service site). Similarly, co-production may be evident in features such as a photo gallery or victims' database, or through links between sites (e.g. the World Trade Center and Pentagon Memorial site).

3. Is the memorial univocal or multi-vocal?

Whether the site producer is an individual or a collective entity, and whether or not a site is co-produced, memorializing may reflect either a single (individual or collective) voice or multiple voices. For example, the Association of Flight Attendants' memorial site, produced by an organization, is univocal—although quotes are used, they are integrated into a uniform overarching narrative. In contrast, the National Park Service site, also produced by an organization, is multi-vocal in its use of eyewitness accounts along with a meta-narrative. Part of the function of official, public memorials is to express a single collective idea of how the event should be memorialized, and so these tend to be comparatively more univocal in contrast with vernacular memorials. However, over time, multi-vocal expression can become a part of the way a public, and originally univocal, memorial is rhetorically constructed offline. This phenomenon is potentiated to a greater degree on the Web than in offline environments, partially because individually produced expression can more readily become a permanent part of the memorial as a whole.

4. How immediately was this memorial posted?

Was the memorial posted on the Web quickly and spontaneously after the event, or later, perhaps after a longer planning and design process? Vernacular memorials are more likely to have immediate, spontaneous beginnings; public memorials are more likely to be planned. However, as the examples provided above from both the Oklahoma City bombings and the September 11 events demonstrate, spontaneous, vernacular memorials, (e.g. the September 11 Victims site), can evolve into, or be appropriated by, at least quasi-official ones. Conversely, official memorials can create a surface for dynamic vernacular contributions, as illustrated by the physical Vietnam War Memorial and the Cantor Families Memorial Web site.

5. How dynamic is the memorial?

Does the memorial appear fixed/static, or is there evidence of evolution in its structure or content? Significant dynamism is apparent on the Neilie Casey and Cantor Families memorial sites, through the evolution of the site structure and content over time. In contrast, as Bodnar (1992) observes, public memorials are often installed to fix memory in a certain way, as illustrated by the New York Police Department site.

6. Who is the intended audience(s)?

Close analysis of a memorial enables one to read out of the text the visitors imagined by the memorial's producer(s). The modes of address in the text of a site have a sign relation that indicates the presumed values and self-identification of the producer's assumed audience(s). These may include the deceased, those who knew the deceased personally, survivors of the trauma, others who were affected by the event, rescuers/heroes, or visitors to the memorial. In some cases, the "sign" may be evidenced through the use of person (e.g. "you") in the text. For example, the Cantor Families memorial exemplifies sites for which the primary audiences are the deceased and family and close friends. In contrast, the National Park Service site is designed largely for visitors.

7. How are the victims positioned relationally?

Does the memorializer address or refer to one or more of the victims as someone known personally by him/her, as a stranger, or as a generalized other? To illustrate, many of the tributes posted on the Cantor Families are addressed directly to the deceased as someone known personally, whereas on the September 11 Victims site tributes tend to refer to victims in the third person and impersonally.

By mapping sites in a matrix comprised of variants of these dimensions it would possible to assess the prevalence of these dimensions by producer type, as well as dimensions for which there is no discernible difference between producer types. We offer Table 1 as an operationalized model of these dimensions; the relationship (or lack thereof) between each dimension and producer type should be investigated further with a larger sample. Sites with memorializing practices corresponding with a variant are designated with a box (Table 1).

Table 1 Dimensions of Web-based Memorializing by Producer Type

Dimensions of Web-based Memorializing	Institutional Sites				Individual Sites			
	NYPD	NPS	AFA	Cantor	WTC Memorial	September 11 Victims	Port Authority Police	Neilie Casey
Focus of commemoration								
Specific lives	☐		☐	☐		☐	☐	☐
Abstract loss		☐			☐			
Heroism	☐	☐			☐		☐	
Coproduction								

	L1	L2	L3	L4	R1	R2	R3	R4
Texts/content		□		□	□	□	□	□
Features					□	□		
Links		□			□	□		
Voice								
Univocal	□		□					
Multivocal		□		□	□	□	□	□
Immediacy of production								
Immediate				□	□	□		□
Delayed	□	□	□				□	
Fixity								
Fixed	□	□	□					
Dynamic				□	□	□	□	□
Intended Audience								
Deceased				□			□	
Friends & family of deceased	□		□	□		□	□	□
Survivors				□	□	□		
Rescuers	□	□			□		□	
Affected		□		□	□			□
Visitors	□	□	□	□	□	□	□	□
Positioning of Victims								
Personally known				□	□	□	□	
Individual stranger(s)	□		□			□		□
Generalized other(s)		□			□			

Close comparison of the eight sites examined in this study in the table above yields some interesting observations that call for analysis of a larger sample of sites. On two of the seven dimensions, the focus of commemoration and intended audience, there were no discernible patterns of difference between memorial Web sites produced by individuals versus institutions. On the positioning of victims dimension, although individually produced sites were more likely to position victims as personally known, surprisingly, this positioning was evident on one institutionally produced site as well, and both types also positioned victims as individual strangers and generalized others. The fact that these dimensions manifest similarly on both individually produced and institutionally produced memorials is intriguing, and suggests that there may be more interpenetration online of what has been considered a clear-cut distinction between public and private memorializing offline. The other four dimensions indicated more predictable differences in Web-based memorializing in conjunction with site producer type. All forms of co-production were more prevalent on this sample of individually produced sites; as was multi-vocality. Furthermore, although a co-produced site could, in principle, be univocal, among the eight sites included in this analysis, all sites that evidenced co-production of content were also multi-vocal. Institutionally produced memorial sites were more likely to be posted later than individually produced sites, and all but one of the delayed-production sites were also fixed rather than dynamic.

Significant insights from this study may also be gained through close comparison of sites within each producer type. The Cantor Families site differed substantially from the other institutionally produced sites in four of the seven dimensions, as the only site of its type to be posted immediately, have dynamic content, position victims as personally known, and address five of six intended audience variants. The World Trade Center site evidenced significant differences within the individually produced sites, in that it commemorated abstract loss and heroism but not specific lives, positioned victims as generalized others, and did not attempt to address the deceased or

friends and family of the deceased as audiences. The distinctive aspects of memorializing on these two sites add further evidence of the interpenetration of public and private in Web-based memorializing.

Conclusions and Implications for Public Memory of Web-based Memorializing

Returning to our research questions, we have demonstrated that Web-based memorializing bears a diverse array of characteristics, some of which are consistent with offline memorializing, and some of which are divergent. We have proposed means by which these characteristics can be conceptualized in terms of dimensions, which could be used to comparatively analyze memorializing practices across a larger set of sites-- however, we are not attempting to generalize findings from this comparative case study. The results of our analysis of eight sites suggest that it would be fruitful for the dimensions we have identified to be examined in relation to each other as well as to producer type in future analyses of online and/or offline memorializing. Finally, our analysis suggests that differences in Web-based memorializing between Web sites produced by institutions or organizations and those produced by individuals are not clear-cut. Although examination of practices across a larger and more representative group of sites would be needed to test these dimensions reliably, our in-depth analysis of eight sites suggests that the practices of Web-based memorializing may vary somewhat by producer type. However, on the Web there is interpenetration of practices often associated with public memorializing offline (e.g. focusing commemoration on heroism) with practices associated with private or vernacular memorializing offline (e.g. focusing commemoration on specific lives). Public memorializing practices are manifested on individually-produced Web sites, and vernacular memorializing practices appear on institutional/organizational sites. Thus, the distinction between public and vernacular memorializing that has been useful in scholarship of offline memorials is harder to sustain, and perhaps less useful, in studies of Web-based memorializing.

In addition to commemorating private lives and enabling the expression of personal grief, the Web-based memorializing practices analyzed in this article fulfilled a communal function. Their construction and continuance have had both immediate and long-term social consequences. In the immediate aftermath of the attacks, they made it possible for a worldwide, bereaved community to participate in the pathos of the event. From an historical perspective, these memorial sites also contributed to the formation of public memory. As Bodnar (Bodnar, 1992, p. 15) noted, public memory is "a body of beliefs and ideas about the past that help a public or society understand both its past, present, and by implication its future. It is fashioned ideally in a public sphere in which various parts of the social structure exchange views." Co-production such as is seen on the National Park Service and World Trade Center and Pentagon memorial sites enables government employees, private citizens, and volunteers to contribute to corporate understanding and interpretation of events. Such collective expression makes it possible for participants and witnesses to tell the story in terms of "heroism and valor rather than of uncertainty and death" (Bodnar, p 247).

Furthermore, by expressing a general sense of collective loss, these Web sites and others served as scenes of collective action and cultural performance (Browne, 1995). They enabled witnesses to contribute to rescue efforts, express their shock and horror, and provide comfort to others. In so doing and insofar as they were archived, these sites presently contribute to the historical record of the attacks. They represent a version of the past which, when taken in concert with other versions, can provide a variegated picture of the forms of social action and reaction that marked post-September 11 events-- and this picture contributes to our present understanding of how these events were experienced and understood. The Web offers a malleable yet somewhat durable surface for collective commemoration over time, and some forms of historical reflection.

In conclusion, we have focused on the characteristics of memorial Web sites as inscriptions of the practice of online memorializing. Several of the dimensions we identified, e.g. co-production, voice, and intended audience, could be analyzed as reflecting various forms of interactivity, and the framework we propose may be useful for investigations of other forms of computer-mediated communication besides Web-based memorializing. On some of the Web sites we examined, various sections of the site evidenced very different characteristics. These differences were elided by our decision to use the whole Web site, or the section of the site dedicated to memorializing, as a whole, rather than individual pages or texts, as units of analysis. Future research could be done using more micro units of analysis. Also, when employing the conceptual framework proposed here, the tendency of memorial sites to evolve over time should be taken into account. Analyzing and mapping a set of sites on several dates over an extended period would illuminate changes in memorializing practices. Furthermore, rather than sub-categorizing variants for each dimensions of Web memorializing as we did in this study, each dimension could be viewed as a continuum and Web site practices could be plotted in relation to each other, i.e. along spectra.

Future research could consider emerging practices of creating online meta-memorials, from individually-produced ones such as the Twin Towers Memorial Photos Videos and News Archive[26] to institutionally-produced meta-memorials such as the September 11 Digital Archive[27] and the September 11 Web Archive[28]. Meta-memorials such as these are repositories of born-digital and digitized memorialization artifacts; they share some characteristics with the archives created from artifacts left at the Vietnam Memorial and the Murrah Building. Future studies could also analyze the interplay of Web memorializing and offline memorializing around a large-scale event, and compare the kinds of practices employed in both. An online survey of site producers would help enrich a future study of memorial sites, to obtain information about traffic patterns and any feedback received that may have influenced the producers' processes of site development and

modification. It would also be interesting to learn from site producers whether Web memorializing changes the meaning(s) of memorializing for those who engage in it. The outcomes of the kinds of future research we have suggested, employing the conceptual framework we have proposed, would significantly advance understanding of memorializing as a social practice, and its role in the construction and interpretation of historical events. Among the many outcomes of the September 11, 2001 attacks was the establishment of Web-based memorializing, in myriad forms, as a technologically-mediated practice for collective remembering that deserves thorough and thoughtful investigation.

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[1] A large collection of Web sites related to the attacks is available via the September 11 Web Archive, http://september11.archive.org. For sites for which archival impressions are available, both the live URL and an URL for the index of archival impressions are provided. All URLs noted in this article were consulted initially in July 2003, and verified again in June, 2004.

[2] For more information about the method of comparative case studies, see Ragin (Ragin, 1987).

[3] Producers were identified through explicit statements of sponsorship or production on each Web site, and verified through Whois and DNS lookups.

[4] http://september11.archive.org

[5] http://www.nyc.gov/html/nypd/html/memorial_01.html and http://web.archive.org/web/*/http://www.nyc.gov/html/nypd/html/memorial_01.html

[6] http://www.nps.gov/remembrance/index.html

[7] http://www.nps.gov/remembrance/director/index.html

[8] http://www.nps.gov/remembrance/dcarea/dc_int.html

[9] http://www.afanet.org/memoriam/

[10] http://www.cantorfamilies.com/cantor/jsp/index.jsp and
http://web.archive.org/web/*/http://www.cantorfamilies.com/cantor/jsp/index.jsp
[11] http://www.cantorfamilies.com/cantor/jsp/tribute.jsp?ID=3072
[12] http://www.worldtradecentermemorial.com/ and
http://web.archive.org/web/*/http://www.worldtradecentermemorial.com/
[13] http://september11victims.com and http://web.archive.org/web/*/http://september11victims.com
[14] http://www.september11victims.com/september11victims/Posters.htm
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[21] http://www.portauthoritypolicememorial.org/Memorial.htm
[22] http://www.nytimes.com/pages/national/portraits/
[23] http://www.neiliecasey.org/index.html and http://web.archive.org/web/*/http://www.neiliecasey.org/
[24] http://web.archive.org/web/20010923234952/http://www.neiliecasey.org/
[25] Our conceptualization of co-production addresses collaboration between actors who are organizationally independent from each other, and who have not chosen to establish a collective identity. We view organizational affiliation as a question of political economy; other researchers may come to different conclusions when assessing affiliation.
[26] http://www.twin-towers.net/
[27] http://911digitalarchive.org/
[28] http://september11.archive.org