

Community Memory

Building multimedia archives on the Internet

by

Ingeborg Loni Endter

A.B. Extension Studies, Social Sciences
Harvard University, 1977

Submitted to the Program in Media Arts and Sciences,
School of Architecture and Planning,
in partial fulfillment of the requirements for the degree of
Master of Science in Media Arts and Sciences

at the

Massachusetts Institute of Technology

February 2000

© 1999 Massachusetts Institute of Technology
All rights reserved

Signature of author _____

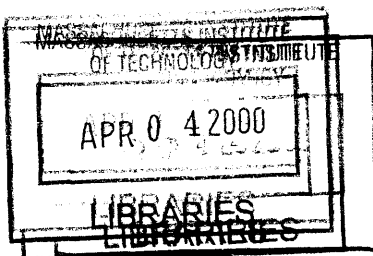
Program in Media Arts and Sciences
September 30, 1999

Certified by _____

Walter Bender
Senior Research Scientist, MIT Media Arts and Sciences
Thesis Supervisor

Accepted by _____

Stephen A. Benton
Chair, Departmental Committee on Graduate Studies
Program in Media Arts and Sciences



ROTORA

Community Memory

Building multimedia archives on the Internet

by

Ingeborg Loni Endter

A.B. Extension Studies, Social Sciences
Harvard University, 1977

Submitted to the Program in Media Arts and Sciences,
School of Architecture and Planning,
on September 30, 1999 in partial fulfillment of the requirements for the degree
of
Master of Science in Media Arts and Sciences

ABSTRACT

Can we use technology to build and strengthen bonds within communities? Can we build technology that will help to elaborate and preserve the shared history of a community? Can we make the technology easy to use, even for beginning computer users?

Community Memory is an attempt to answer those questions. It is a Web-based environment where a community can collaborate to build an electronic scrapbook. Narrative expression, both as stories and as photographs, is the tool with which the communities elaborate their shared history and identity. Two communities, an extended family and a high school reunion class, have begun using the tools, and data was collected on their interactions during a period of several months. The communities were given an email list to use as well as the Web-based tools of the scrapbook.

The data show that communities approach the project quite differently and that strong preferences emerged both between the two groups and within one of the groups for different modes of communicating their stories.

Thesis Supervisor: Walter Bender

Title: Senior Research Scientist, MIT Media Arts and Sciences

This work was supported in part by the MIT Media Laboratory's News in the Future research consortium and Telecom Italia.

Community Memory

Building multimedia archives on the Internet

by

Ingeborg Loni Endter

The following people served as readers for this thesis:

Reader _____
Glorianna Davenport
Principal Research Associate
MIT Media Laboratory

Reader _____
John S. Driscoll
Editor-in-Residence, News in the Future Research Consortium,
MIT Media Laboratory

Reader _____
Brian Smith
Assistant Professor of Media Arts and Sciences
LG Career Development Professor of Media Arts and Sciences
MIT Media Laboratory

Acknowledgements

My heartfelt thanks go to the following people, who got me to the day:

My husband, Juern Juergens, who carried more than his share of the household chores while I was otherwise occupied, and who gave unstintingly of his love, moral support, logistical support, and advice. And my children who never thought it was unusual that Mom was back in school. (I love it when they say, "I'm so proud of you, Mom.")

My advisor, Walter Bender, who always reminded me to "keep it simple," and whose criticism and advice was always "spot on," thus keeping me on the right path.

My readers: Jack Driscoll, who is ever a sure source of encouragement and wisdom—for both the academic and practical aspects of this thesis; Brian Smith, who continually found new ways to look at problems and issues, and Glorianna Davenport, who urged me to push the envelope and who had many fresh ideas I hadn't thought of.

Many thanks to the Endter extended family and to the Melrose High School '49ers who were cooperative, enthusiastic, and kind as they jumped into using my software. Special thanks to Don Norris, who connected me to the '49ers and who was a loyal evangelist for the project.

Professor Justine Cassell gave me insights from the field of linguistics and discourse and helped me to formulate the measurement of my data.

My work-buddy, Jennifer Smith, kept me on track when I would rather be gardening and also provided numerous tips for my research, reading, and programming. Many other colleagues at the Lab gave generously of their technical advice, helped to solve programming problems and gave moral support when that was needed: Tara Rosenberger Shankar, Pengkai Pan, Doug Koen, Janet Cahn and others too numerous to mention. You know who you are.

Joanna Berzowska was my artist-angel, who helped me improve the aesthetics of my web pages.

Marina Umaschi Bers helped get me started by sharing the experience of her Kaliedostories project.

My undergraduate research assistants, Tuyet Nguyen, Arnold Kim, and Dennis Quan, who kept everything running smoothly so I could finish this thesis.

The memory of my parents, Paul and Anna Endter, contributed immensely to my ideas for this project. Their courage and wisdom motivated me to care about family and community. And to care about memories..

Table of Contents

1	Introduction.....	11
	Impact of technology on the life of a community.....	11
	Disintegration of community and a sense of alienation in individuals.....	11
	The HomeNet study.....	13
2	The questions this research is trying to answer.....	15
3	Definitions and theory.....	16
	What do we mean by community?.....	16
	Sharing Our History: Narrative and Photography.....	17
	Narrative.....	17
	Photography.....	20
4	The State of <i>Community</i> on the Internet.....	22
	Geographic communities.....	22
	Virtual Community Sites.....	23
	Demographic Community Sites.....	23
	Ethnic or political communities.....	24
	Sites for telling stories.....	24
	Photo Albums, Memories.....	24
5	Related research.....	26
	The Silver Stringers.....	26
	<i>The Melrose Mirror</i> and <i>Satter-lights</i>	27
	<i>The Junior Journal</i>	30
	MUSIC.....	32
	SAGE.....	33
	Kaleidostories.....	33
6	Community Memory: design and implementation.....	34
	Goals and design requirements.....	34
	The software.....	35
	The architecture.....	36
	Database design.....	37
	Functionality.....	38
	User Interface.....	40
	A Tour of the Scrapbook.....	44
	The participants.....	49
	The Endter extended family.....	49
	Melrose High School reunion class of 1949.....	50
	Getting started.....	51
	Email lists.....	51
	Registration.....	51
	Start-up Questionnaire.....	52
	Evaluation of data.....	54
	Sources of data.....	55

	Comparison of the two groups and the modes of interaction	55
	Participants' reactions	60
	Discussion and conclusions	63
	Differences between communities	63
	Further Work	66
7	Bibliography	68
8	Appendix A: Start-up Questionnaire	73
9	Appendix B: Follow-up Questions	79

List of Figures

	Figure 5-1 From <i>The Melrose Mirror</i> series on the Great Depression	28
	Figure 5-2 From the <i>Satter-lights</i> series featuring stories about <i>Active Seniors</i>	29
	Figure 5-3 The front page of the August 1999 edition of the <i>Junior Journal</i>	31
	Figure 6-1 Server, clients linked by Internet	36
	Figure 6-2 Database and application server	37
	Figure 6-3 The login page	44
	Figure 6-4 The welcome page	44
	Figure 6-5 Browsing the database	45
	Figure 6-6 Viewing a picture	45
	Figure 6-7 Viewing a story	46
	Figure 6-8 Adding a comment to a picture	47
	Figure 6-9 The story editor	48
	Figure 6-10 The mail page	48
	Figure 6-11 Melrose and Endter group compared by activity	56
	Figure 6-12 Melrose participants: logins to scrapbook compared with email messages	58
	Figure 6-13 Endter participants: logins to scrapbook compared with email messages	59

1 Introduction

When Emerson was told that the installation of the Trans-Atlantic Cable would in the future permit someone in London to speak to someone in New York, he is said to have remarked, “But will he have anything to say?”¹

If we assume that the Web will someday be an everyday phenomenon, then I feel we should think ahead to ways that it can contribute to the social environment in a positive way.

I hope that my research can shed light on at least one narrow area where the technology of the Internet can have an effect on how we think about community, how we can interact within a community, and how we can help communities to communicate.

Impact of technology on the life of a community

It seems to us that we are getting perilously near the ideal of the modern Utopian when life is to consist of sitting in armchairs and pressing a button. It is not a desirable prospect; we shall have no wants, no money, no ambition, no youth, no desires, no individuality, no names and nothing wise about us.

—*The Electrician*, 11 February 1892²

Disintegration of community and a sense of alienation in individuals

Many voices have been raised in the press and in the academy about how new media, particularly the Internet, affect an individual’s sense of identity and level of social interaction. (Birkerts, 1994, Grodin and Lindlof, 1996, Turkle, 1995). Their concerns have a familiar ring. Technology has been of concern to the scholarly and political communities since the Industrial Revolution in the 19th Century. As early as 1829 Thomas Carlyle wrote, “The machine represents a change in our whole way of life because ‘the same habit regulates not our modes of action alone, but our modes of thought and feeling. Men are grown mechanical in head and in heart, as well as in hand.’” (quoted in Marx, 1964 p.174)

The concern for the future of community life has become particularly acute since World War II. There has been a profound change in the fields of psychiatry and sociology as the country began to recover from the social and economic upheavals of the 1930s Depression, the War, and a revitalized post-war economy. Just after

¹ Briggs, 1977, p. 50. I presume the author is referring to the poet and essayist Ralph Waldo Emerson, 1803-1882.

² Quoted in Briggs, 1977, p. 56.

WWII there began a new emphasis on community psychology and community psychiatry as a side-effect of returning veterans' needs and the vast changes in communities during and after the war.

Some might agree that the absence or dilution of the psychological sense of community is the most frequent and poignant feature of life in our communities, that in the context of social living it gives rise to the intrapersonal and interpersonal dynamics that heighten rather than lessen the sense of aloneness, that it acts as both cause and effect of disordered thinking and acting, that it nourishes the experience and strength of ineffable anxiety—and while agreeing that all of this may be true, as countless writers have maintained, they may still ask, what can the psychologist or psychiatrist do except help individuals cope more effectively with this problem? Who can listen to our patients describe their desperate efforts, through work or play, to feel part of some larger entity, to break through the barrier of aloneness, to feel part of and wanted by others—who can listen without agreeing that all of this in some ways reflects how our communities have changed, diluting rather than reinforcing a sense of community? But what can we do about it?

This was the question which in the past two decades came to haunt psychology and gave rise to the new field of community psychology. The question was answered in different ways by different people, but there were, nevertheless, some underlying agreements: focus had to shift from an emphasis on intrapsychic factors to understanding and changing larger social contexts; adapting such a focus would require new conceptualizations and tactics; and the major criterion by which these new efforts would be judged was the degree to which they led to a greater psychological sense of community. (Sarason, 1974 p.154-155)

The age of the automobile and the economic growth of the 1950s spurred the growth of suburbs, the decline of inner cities, and increasing mobility of workers and their families. A few observers spoke eloquently about the impact of policies and trends in urban design and suburban development. (Jacobs, 1961, Mumford, 1968). The impact of radio and television went further than altering our geography. They began to change the balance between the public and the private spheres, our sense of public and private roles and places (Meyrowitz, 1985). As more and more people began to spend more time in front of radios and then televisions, fewer and fewer opportunities for informal public socializing were available.

Ray Oldenburg in *The Great Good Place* argues that modern American society lacks “third places,” places distinguished from one’s home, where personal and family relationships are nurtured, and one’s work, where at best one pursues career and professional goals—or at worst joins the “rat race.” Our politics put little value or priority on enhancing shared social spaces that are free and available to the public. Social trends emphasize the acquisition of things like entertainment systems and outdoor play equipment for one’s own home that used to be shared by a community at local theaters or playgrounds. Politically and socially Americans place more value on owning one’s own pool than spending time at the community pool in the neighborhood. As a consequence, opportunities for informal social encounters are becoming rarer. Third places are neutral ground where social distinctions are leveled, where a playful mood is a hallmark, and where regular visitors engage in conversation as one of the main activities. They

are the underpinning of community life, and, as Oldenburg points out, they are rapidly disappearing.

Can Internet technology, while it presents to some a bleak picture of individuals retreating from face-to-face social interaction, actually provide some form of a third place? I do not by any means advocate replacing real, tangible third places with virtual ones. But the possibilities presented by an enriched form of communication within communities are intriguing. The Internet has created many opportunities for virtual communities to form around common topics of interest (Rheingold 1993). Chat rooms already fit Oldenburg's definition of a third place rather well: they provide an informal social space, a playful atmosphere, a neutral ground where conversation is the primary activity. But the quality of interaction in chat rooms differs immensely from the face-to-face encounters in cafes, coffee shops and community centers (Turkle 1995). I'm concerned with a different problem of *real* communities that technology might alleviate. Sarason's description of people's desperate efforts to feel a part of some larger entity reminds us that most of us do have communities to which we nominally belong: extended families, school communities, even religious and ethnic communities. But often for one reason or another we have become distanced from these communities. In addition to the disappearance of third places where communities can meet informally and coalesce, many communities, formerly kept together by physical proximity, are now scattered geographically and losing touch with their identity as a community, and with each other as individuals.

The HomeNet study

I suspect that in the not-too-distant future, the worship of technology will be widely recognized as a destructive force, responsible for the extirpation of family, community, and nature on a global scale.

—Harvard alumna, in a letter to the editor,
Harvard Magazine, September-October 1999

Given the inevitable impact upon communities of new media and communication technology, is there hope that we can avoid the fate predicted by the doomsayers (Birkerts 1994, Henderson 1996, Stoll 1995) and actually improve the life of communities? What can designers and creators of new technology contribute to such an optimistic goal? The HomeNet study provides some intriguing results and challenges.

Researchers at Carnegie Mellon University conducted an ambitious study on the social and psychological impact of Internet use. Beginning in 1995, a total of 93 families in the Pittsburgh area were provided with computers, a free phone line, free access to the Internet, and a basic suite of applications including an email program, a Web browser, and Claris Works Office. They were monitored for a period of up to two years. Data gathered by monitoring Internet use and following up with psychological measurement tests revealed that greater use of the Internet

was associated with declines in social involvement and increases in depression and loneliness.

The authors offer some remarks on implications for policy and design:

Designing technology and policy to avoid negative outcomes will depend on a more complete understanding of the mechanism through which use of the Internet influences social involvement and psychological well-being. If we assume, for example, that the negative consequences of using the Internet occur at least partly because people spend more time and attention on weak ties and less time and attention on strong ties, then some design and policy solutions come easily to mind.

Most public policy discussion of the Internet has focused on its potential benefits as an information resource and as a medium for commercial exchange. Research funding also heavily favors the development of better resources for efficient information delivery and retrieval. Both policy and technology interventions to better support the Internet's uses for interpersonal communication could right this imbalance. (Kraut et al 1998)

2 The questions this research is trying to answer

People capable of afflicting anybody, anything or anyplace with a name like “cyberspace” surely cannot have the spiritual and esthetic delicacy essential to creation of a magical, irresistible playground, can they?

—Russell Baker, *A Little Cyber Grouch*³

Taking up Baker’s gauntlet, I offer the *Community Memory* project as an inquiry. If we disregard for the purpose of this thesis the problems and dilemmas posed by communities that exist only as *virtual* communities, I pose the following questions:

1. Can we use technology to build and strengthen bonds within *physical* communities that are becoming fragmented in our postmodern era? Can such technology actually influence the psychological sense of community?
2. Can we build technology that will help to elaborate and preserve the shared history of a community? Does the power of a shared history of stories and images translate to the Internet? Can technology facilitate the storytelling process, the image sharing -- and the discussions that come about when sharing is possible?
3. Can we create technology that is easy enough to use so that we lower the barriers for those who are uncertain about whether they can master the technology?

To try to answer those questions I have built a Web-based environment where a community can collaborate to build an electronic scrapbook. Since I believe that storytelling is a powerful means by which a community can pull together, I provide tools for narrative expression, both as stories and as photographs. The tools are designed to help the members of the community to elaborate and explore their shared history and identity.

Two communities, an extended family and a high school reunion class, have begun using the tools. Both communities were given an email list to use as well as the Web-based tools of the scrapbook. Trying to discover whether the tools and the process of building the scrapbook accomplished the goals I had set for the project, I collected data on each community’s interactions during a period of several months. I present details of the project’s design and functioning, and my analysis of the data in section six.

³ In Henderson, 1996.

3 Definitions and theory

What do we mean by community?

"Community" now has become a buzzword, a bandwagon concept, but what does it mean?

First let's try to define what we'll be talking about when we say "community" in the context of this paper. What is a community? What are the aspects of a *healthy* community? Sarason's (1974) seminal work, *The Psychological Sense of Community: Prospects for a Community Psychology*, made a beginning. He was not referring to a geographic unit, although people in a town or neighborhood could be defined as a community in his sense. He described the properties of a community: its members have a perception of similarity to others in the group, they acknowledge an interdependence among members of the group, and the members feel that they are a part of a larger dependable and stable structure.

McMillan and Chavis (1986) refined Sarason's definition. They emphasized four main characteristics that distinguish a community:

- Membership – members have a feeling of belonging
- Influence – members have a sense that the group matters, that as a group they can make a difference
- Integration and fulfillment of an individual's needs (reinforcement) – the association with the community must be rewarding for its members. "A strong community is able to fit people together so that people meet each others' needs while they meet their own." Shared values make it possible for communities to provide the necessary balance of priorities to be successful at meeting members' needs.
- Shared emotional connection – in particular, a shared history

Ten years later, McMillan (1996) reflected upon his earlier definition and reformulated the four characteristics as:

- Spirit – a setting where we can have connections to others, but where we can be ourselves. There should be a sense of "emotional safety," "boundaries," and a "sense of belonging."
- Trust – there should be some sense of order. We know that some in the community have more power than others, but we acknowledge and trust that structure.
- Trade – a sense of how members benefit one another and the community. The ideal is to "transcend score-keeping and .. enjoy giving for its own sake."
- Art – "a shared history that becomes the community's story symbolized in Art."

Jacobs (1961), Oldenburg (1989), and Sarason (1974) are among the many voices in the fields of urban design, sociology, and psychology who point out that when changes—physical, political, or social—are made in a geographic community it is important for community leaders and social scientists to evaluate the impact upon the community and to design the changes to minimize the negative and maximize the positive effects on the community.

One could argue that the positive sense of belonging to the larger community was easier to achieve in the past because communities were so much smaller, more face-to-face contact was possible, it was not difficult to know a lot about how the community worked, and it was not hard to see with one's own eyes everything that existed within the community's boundaries. But this argument begs the most important question: how did it happen that our communities permitted a type and rate of growth that destroyed for many people the psychological sense of community? It was not growth per se but a type of growth not governed by the value of maintaining or bolstering the psychological sense of community. (Sarason, 1974 p.153)

In thinking about what sort of online environment would support and enrich community life, the four aspects of the psychological sense of community provide some guidelines. An ideal environment would be one where community members could participate, because they feel that they belong. It would provide a sense of security and emotional safety. Members of the community could establish some form of order if they chose, but they would all have opportunities to make contributions and share the benefits of those contributions. And finally, there would be an opportunity to explore their shared history in what McMillan (1996) calls Art—storytelling and pictures.

Together these elements [Spirit, Trust, Trade] create a shared history that becomes the community's story symbolized in ART. A picture is truly "worth a thousand words" and stories represent a people's tradition. Song and dance show a community's heart and passion. Art represents the transcendent values of the community. But the basic foundation of art is experience. To have experience, the community's members must have contact with one another. Contact is essential for sense of community to develop. (p.322)

Sharing Our History: Narrative and Photography

Narrative

"Looks like this old city finally learnt how to have fun," Rashid grinned.
"But why," Haroun asked. "Nothing's really changed, has it? Look, the sadness factories are still in production, you can see the smoke; and almost everybody is still poor..."

...

"I'll tell you what to be happy about," said a policeman who chanced to be floating by on an upturned umbrella. "We remembered the city's name."
"Well, out with it, tell us quickly," Rashid insisted, feeling very excited.

“Kahani,” said the policeman brightly as he floated off down the flooded street.
“Isn’t it a beautiful name for a city? It means ‘story’, you know.”

—Salman Rushdie, *Haroun and the Sea of Stories*

Rushdie’s characters are marveling at the change in a community—brought about by a change in the community’s attitude toward stories. The identity and character of communities are defined and shaped by the stories that make up their shared histories. A community’s history is constructed by the passing down of stories from generation to generation. And as new generations come into the community, they define how they fit into the ongoing history based on what they know and assimilate of the collected stories.

The last 20 years have seen a resurgence of interest in integrating narrative into a variety of disciplines. There are many complex reasons for this but an important factor is the disenchantment with mechanistic models of thought about human behavior and a backlash against the scientific and technical search for ultimate “truth.” The loss of meaning in modern life can be (and has been) attributed to the replacement of narrative knowledge by other more technical forms of cognition. Practitioners are seeking methods that, unlike the more traditional quantitative methods, allow them “to reconstruct social phenomena in their full richness and complexity.” (Hinchman and Hinchman, 1997)

Of particular interest to my research is the role of narrative in exploring community and personal identity. The psychologist Dan McAdams (1993) uses the concepts of narrative and personal myth to build on Erik Erikson’s life cycle theory of human development. He maintains that beginning in infancy we start to collect images, symbols, and attitudes (hopefulness, optimism, pessimism) from which we later fashion our personal myths. In adolescence we use our arsenal of images and symbols to try to formulate meaningful answers to the cosmic ideological questions which are awakening in youthful minds. In adulthood we try to give meaning to the lives we are living, and as we grow older we struggle with the myth’s *denouement* and strive to leave a legacy that will survive us. McAdams maintains that we create our identities, our personal myths, much as we fashion stories. We build on the characters that we have internalized and we use them and the images and attitudes of our personal myths to give meaning to the events of our lives.

The continuing activity of building stories of personal history and meaning is not only a solitary activity. McAdams emphasizes that individual stories are interrelated with other individuals’ stories. “The stories we create influence the stories of other people, those stories give rise to still others, and soon we find meaning and connection within a web of story making and story living. Through our personal myths we help to create the world we live in, at the same time that it is creating us.” (1993, p.37)

From the viewpoint of moral philosophy, Alasdair MacIntyre (1984) contends that all attempts to explain the notion of personal identity independently of the

notions of narrative, intelligibility, and accountability have failed. He, like McAdams, describes the correlative aspects of what he calls “narrative selfhood:”

I am not only accountable, I am one who can ask others for an account, who can put others to the question. I am part of their story as they are part of mine. The narrative of any one life is part of an interlocking set of narratives. Moreover this asking for and giving of accounts itself plays an important part in constituting narratives. Asking what you did and why, pondering the differences between your account of what I did and my account of what I did, and vice versa, these are essential constituents of all but the very simplest and barest of narratives. (p.256)

The psychologists Kenneth Gergen and Mary Gergen (1983) present a social constructionist view of narrative. They too maintain that we do not simply arrive at a sense of identity, but that we engage in an ongoing effort to understand ourselves through stories. Over a lifetime of social interaction we develop a capacity for this understanding and a capacity for communicating it to others. The social utility of narrative is important to the entire community. Our society affects us as we affect it. In their view, “those people with an extensive background in the history of their culture or subculture, or with an elaborated sense of their place in history, may possess more coherence among narratives than those with a superficial sense of their historical position.” (p.172) In society hardly any individual action is without an effect on others. We rely on each other to understand our actions and react appropriately. “This delicate interdependence of constructed narratives suggests that a fundamental aspect of social life is a reciprocity in the negotiation of meaning.” (p.178)

Finally, the communication theorist Walter Fisher (1997) goes farthest into the discussion of the importance of narrative to communities. He argues that “the constitution of communities requires the existence of certain modes of communication.” He proposes a narrative paradigm for formalizing and understanding the experience of human communication. His paradigm has five presuppositions (p.314):

1. Humans are essentially storytellers
2. The definitive modes of human decision and action are “good reasons” (elements that provide warrants for accepting or adhering to the advice fostered by any form of human communication that can be considered rhetorical).
3. The production and use of good reasons are ruled by matters of history, culture, and character along with the specific constraints of time and place of representation.
4. Rationality is grounded in the nature of persons as narrative beings, in their inherent awareness of narrative coherence—whether or not a story hangs together, and narrative fidelity—whether or not the stories they experience ring true to the stories they know or believe to be true.
5. The world as we live it is a series of stories that must be chosen among in order for us to live life in a process of continual re-creation.

Fisher's communities adhere to sets of values that might (and often do) conflict with the values of other communities to which the same person might belong. We all strive in our lives to bring coherence to these conflicting sets of values. The process of exploring and understanding these common values through the exchange of stories is a key element in the life of a community.

Photography

Anyone who knows what the worth of family affection is among the lower classes, and who has seen the array of little portraits stuck over a labourer's fireplace ... will perhaps feel with me that in counteracting the tendencies, social and industrial, which every day are sapping the healthier family affections, the sixpenny photograph is doing more for the poor than all the philanthropists in the world.

—*Macmillan's Magazine* [London], September 1871⁴

We may think the journalist's conclusion goes too far, but few would dispute the idea that family photographs have a power and value far beyond their physical representation as snapshots. The photographic medium was quickly adopted as a domestic, popular medium in the 19th century. It became easily available and widely used with the introduction by George Eastman of the "Kodak" box camera in 1888. Eastman's motto "You push the button, we do the rest," brought photography to the masses (Newhall, 1964). Today, more than a hundred years later, we are surrounded by images, moving and still, on all the media except radio. The Internet as we know it today (really, the World Wide Web) has become a multimedia experience rather than exclusively a text medium. Since we have this new affordance in the realm of Internet communication, we can take advantage of the narrative qualities of photography and include it as an important mode of communication that we can offer to communities.

Susan Sontag (1977) wrote about how families (and other groups) use photographs to construct a chronicle of themselves. Photographs are a way of documenting experience, certifying that this or that event did happen. Furthermore, in families photography has become so commonplace that *not* taking pictures of one's children could be construed as parental indifference. But the real power of personal⁵ photographs is their content and meaning, which can change on each viewing and for each viewer. Roland Barthes (1981), in sorting through his mother's papers and photographs after her death, found only one that he felt really allowed him to recognize his mother. It is a photo of her as a child, in the garden with her brother. All the other pictures, he contends, show only aspects of his mother. Despite his pages and pages of reflection on the nature of reality—of the photograph and the scene that was photographed—and on different

⁴ Quoted in Sontag, 1977.

⁵ What I call "personal" photographs are those that have some personal connection to the viewer, either as family photographs or photographs relating to some group to which the viewer belongs. I shall confine this discussion to personal photographs.

ways of seeing, we never really know why this photograph and not others moved him so. It is significant that while he shows us many other photographs in his essay, he never shows the childhood photo of his mother. While we as readers and strangers to Barthes can understand the significance of the other photos he chooses to show, we could never share his experience of viewing the photo of his mother as a child.

Exactly because of their ability to carry special meaning within a community, photographs, like stories, document and shape the collective memory of communities. Like McAdams' and the Gergens' belief that our stories shape us as we shape them, William Mitchell (1992) uses similar language to talk about photography:

We make our tools and our tools make us: by taking up particular tools we accede to desires and we manifest intentions. Specifically, the tools and media of traditional photography...represent the desire to register and reproduce fragments of visual reality...They characterize a way in which we have wanted to see the world, and in the world since 1839 they have played a crucial role in the creation of collective memory and the formation of belief. (p.59)

Marianne Hirsch (1997) discusses the role of photography in postmodern society. She probes the acts of looking and being looked at, what she calls the "familial gaze" and its effects upon how we construct meaning from the collaboration of looking and being observed in the family context. "Photographs offer a prism through which to study the postmodern space of cultural memory composed of leftovers, debris, single items that are left to be collected and assembled in many ways, to tell a variety of stories, from a variety of often competing perspectives." (p.13) We are not only shaped by our stories and the memories evoked by photographs, we are also influenced by our experience of the memories of others—what Hirsch calls "postmemory." Postmemory is distinguished from memory by generational distance (my generation's memory of World War II is through the memories, photos, and stories of my parents, not my own) and from history by deep personal connection.

It is precisely this deep personal connection that makes photographs an important tool for probing and understanding communities' values—those they share and those they reject—and their shared history.

4 The State of *Community* on the Internet

It is not possible to provide an exhaustive guide to sites on the Web that claim to create, support, or target communities. For the purpose of putting my research in context, I will give a selective review of sites that are based on community ties—geographic, demographic, or virtual—and those that emphasize communication or community memory via stories or photographs.

The earliest forms of communities of interest on the Internet, the newsgroup and the listserv, are alive and well. They are probably still one of the most successful forms of electronic community and they serve to illustrate that communication is the most important feature of Internet technology for communities.

Geographic communities

The Community Network movement began in the 1970s. A project called “Community Memory,”⁶ begun in the mid-1970s in Berkeley, California was probably the first attempt to create a computer network within a geographical community (Schuler, 1994). It and many of the community sites that followed it were bulletin-board systems with a text-only user interface. Most were community-supported projects that offered free access to the service via a local dial-in phone number.

When I tried to discover whether any of the early free-nets had made the transition to the Web, I found the *Public Access Network Directory*, (<http://www.clir.org/pand/pandhome.html>). The Council on Library and Information Resources (CLIR) now hosts the directory. The main page leads to a nationwide list of public access sites. The home page announces that in 1996 CLIR was awarded a two-year grant to improve and maintain the directory. Most of the access information on individual sites lists a dial-in telephone number and sometimes an FTP address. There is no sign that the site is being actively maintained. Although exploring the fate of the early free-nets is not in the scope of my research project, it would be interesting to investigate for those who are studying geographic communities online.

One geographic community that has a very successful presence on the Web is the *Blacksburg Electronic Village* (Cohill and Kavanaugh, 1997, Carroll and Rosson, 1996) (<http://www.bev.net/>). Blacksburg Electronic Village was begun as an attempt to share some of the computing resources of Virginia Tech with the citizens of Blacksburg, many of whom were students, faculty, or staff of the

⁶ When I named my project *Community Memory*, I had not heard of the Berkeley project. However, I hope that my project can be a tribute to that pioneering effort rather than a free ride on the name.

University. Today it is a collaboration with the university and private community resources.

The developers of KOZ.com - "Reinventing Communities Online" (<http://www.koz.com/>), sell a software system called CPS—Community Publishing System—that allows communities—towns, schools, alumni groups, extended families, to create web sites for their community. From their main page there are links to many sites for small communities, schools, and organizations.

Planet Alumni (<http://www.planetalumni.com/>) provides free site hosting for high schools, colleges, and fraternities/sororities. The sites are used for alumni to keep in touch, for organizing alumni events like reunions, and to post alumni news.

Virtual Community Sites

Sites like *Geocities* (<http://geocities.yahoo.com/home/>) and its imitators claim to be creating an electronic community by offering free hosting for individuals or groups who want to create their own web pages. These sites are organized into thematic neighborhoods. With the exception of a few activist “monitors” who are available to other members for advice—few of the members of these neighborhoods are in contact with each other—it is hard to imagine how these loosely related sites could form a community.

Chatrooms and virtual worlds are online sites where a community of people meet much as they might in a real-life social setting. AOL chatrooms, the Palace, MUDs and MOOs (see the site for Musenet at <http://www.musenet.org/> for links to some educational MUDs), allow people to meet and chat and in some cases in the MUDs, to build projects together. These are probably the most social in the sense that people actually communicate with the other readers/viewers of the site. The collaborative community-building aspect of some MUD sites offer many very rich possibilities for interaction among the users and for forming communities. But in many sites that rely only on chat, the contacts are ephemeral, and often shallow.

Forum sites like *Delphi.com* (www.delphi.com) allow visitors to the site to create discussion forums for their own company or groups. Most of the forums are organized around topics of interest like investing, sports, religion. *Lusenet* (<http://greenspun.com/bboard/>) is a site that supports database-backed threaded discussions and Q&A forums as a free service for web publishers.

Demographic Community Sites

Web sites that are based upon a demographic community are growing in popularity.

Some examples:

- *SeniorNet* (<http://www.seniornet.com/>), and
- *Third Age* (<http://www.thirdage.com/>) for over-55s.
- *Women.com Network* (<http://www.women.com/>),
- *iVillage* (<http://www.ivillage.com/>), and many others for women.

There are too many sites of this nature to review or list. The best of these sites encourage participation from their readers, who often contribute stories, pictures, letters and often create a community, participatory atmosphere. The worst are simply forms of highly targeted programming with little opportunity for interaction.

Ethnic or political communities

There are some sites based on an ethnic or political community which try to pull together a geographically scattered group of people to support a common cause or to reinforce an ethnic identity.

One excellent example is a site on Kurdistan (<http://www.akakurdistan.com/>). This site relies heavily on stories and pictures from readers and emphasizes the shared history and community of Kurds, although individuals contributing material to the site are usually not in direct contact with each other.

Sites for telling stories

Based on a series of Digital Storytelling Festivals held since 1995, Abbe Don organized a Digital Story Bee in February 1998 in San Francisco. The results are posted on her site, *Bubbe's Back Porch* (<http://www.bubbe.com/>).

the {fray} (<http://www.fray.com/>), also based in San Francisco, is a site built around storytelling. Readers are invited to send stories.

Other story sites like *San Francisco Stories* (<http://www.sfstories.com/>) are filled with fine stories by their authors but allow no interaction with visitors to the sites.

Photo Albums, Memories

One of the earliest sites that I found that is built around photographs and stories is *Collected Visions* (<http://cvisions.cat.nyu.edu/>), a project at the NYU Center for Advanced Technology. The site collects photographs and stories from visitors. Visitors may also send stories inspired by photographs on the site. There is a related site called *Connecticut Visions* at <http://www.ctvisions.org/>.

“A grassroots effort to preserve the stories of Humanity, one person at a time,” is how its founder describes *Infinite Humanity* (<http://www.123456789.net/>). Anyone can send stories, and eventually photographs and sound will also be accepted. It is a privately funded site.

In recent months there has been a proliferation of commercial album sites. They have advertising and sell products but provide free Web space for creating albums. For example:

- *PhotoLoft* (<http://www.photoloft.com/>)
- *PhotoIsland* (<http://www.photoisland.com/>)
- *Yahoo's Briefcase* (<http://briefcase.yahoo.com/bc/>)

Kodak's PhotoQuilt page (<http://alts1.kodak.com/US/en/corp/further/photoQuilt/>) invites visitors to send photos and stories to the site to create a gigantic “PhotoQuilt of the Millenium. Every Picture Tells a Story. Share Yours.”

5 Related research

As we have seen, there is considerable research in the fields of both community building and narrative. However, not much attention has been paid in the field of electronic communication to studying how we can exploit what we know about the power and importance of narrative to build richer forms of communication, particularly ones that support community life. Several projects at the Media Laboratory have explored one or another of these aspects in recent years.

I describe the *Silver Stringer* project at some length, because my work on that project inspired much of what I have tried to do with *Community Memory*. The fact that the project exists in a real world context and has been running for three years has given us a perspective that is rare in laboratory research projects. Its participants were drawn from a geographic community, but through their participation in the project they have become a tightly-knit community on their own. The *MUSIC* project applies social constructionist theories to the creation of technology that supports real life activism and participation within a local community. *SAGE* and *Kaliedostories* are of interest because they both used narrative tools to allow participants to explore issues of values and identity. *SAGE* concentrated on individuals, but *Kaleidostories* involves collaboration among a group of geographically dispersed participants.

The Silver Stringers

“When someone goes on a trip, he has something to tell about,” goes the German saying, and people imagine the storyteller as someone who has come from afar. But they enjoy no less listening to the man who has stayed at home, making an honest living, and who knows the local tales and traditions.

—Walter Benjamin, *The Storyteller*

The News-in-the-Future Consortium (NiF) of the MIT Media Lab began the *Silver Stringers* project in 1996, working with a group of senior citizens in Melrose, Massachusetts. The intention was to experiment with a new community-centric approach to news coverage and presentation, to train and equip members of a group to be reporters, photographers, illustrators, editors, and designers of a localized Web-based publication. Two important goals were to enable people in a community to become producers as well as consumers of news, and to create an environment for collective activity, learning, and collaboration among the members. (Driscoll, 1999)

As its name implies, the project was concerned from the start with a population of older adults.⁷ Realizing that people over the age of 50 have a vast store of history and understanding and contacts within the communities where they have lived and worked, we wished to tap into those strengths in our effort to develop new paths for community journalism. The collaborative and social aspects of the project were intended to help to reduce social isolation and to provide older adults with meaningful and rewarding opportunities to continue to be active and valuable members of their communities, as well as enriching themselves by continuing to learn new skills.

The project affords a number of interesting areas to investigate: the learning styles of older adults, attitudes toward computer technology, investigations of how technology can be used to enable community journalism, to name just a few. One of the most interesting aspects for my research is that it provides opportunities for members to use narrative and images to explore meaning in their own lives and the shared history of their community.

The Melrose Mirror and Satter-lights

Most of the original group of Silver Stringers in Melrose had never used computers before, and, of the two or three that had been exposed to computers in a workplace, none had ever used the Internet. So the approach to using computers had to be simple, straightforward, and easy to maintain. The software developed for this project was designed to automate as much of the publishing process as possible.

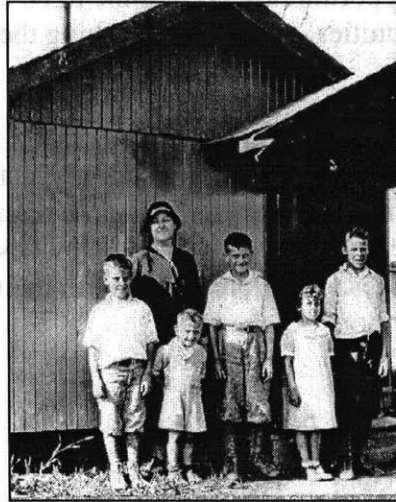
In the summer and fall of 1996 a start-up core of 10 members had increased to 14 and produced 28 submissions for the first edition of *The Melrose Mirror*. Of these, only two were coverage of current events in Melrose -- and one of those involved the celebration of the 150th anniversary of the Sisters of the Holy Child Jesus, and so also included some history of the order and their work in Melrose. There were 12 offerings in poetry, and about half of those involved telling personal stories. Travel was a popular topic (six articles) as was a form of personal commentary (five articles) on topics ranging from national politics to the Bible to neighborliness in Melrose.

The original band of 14 has swelled to almost twice that, and in the course of the three years nine of the original members are still active in the group. Today's membership even includes two former Melrosians living in Florida and California who participate remotely. There is an email mailing list for the 14 members who are now online.

⁷ The word *stringer* comes from the old newspaper practice of paying free-lance writers by the length of their articles as they were typeset. The length was usually measured with a piece of string. The term is still used in journalism to mean a free-lance writer. The Media Lab's designation of *Silver Stringers* pays homage to older adults in their "silver" years.

One solution to Depression woes

by Russ Priestley



SO WE WENT TO FLORIDA: "The Depression? In the early '30's", Russ Priestley explained, holding a tattered photograph, "our family traveled each year during our father's vacation. Each evening we rented an overnight cabin, forerunner of today's motel. They were simple and basic, as you can see in this picture taken by my father. This small room held the Priestley family of seven for the night, on our way to Florida. I think we paid \$2, maybe \$2.50. In the rear is my mother Olive, and in front, from the left, are me, Warren, Bob, Olive Marie and Gil. My dad often told us that it was as cheap to travel as it was to stay home. So we went. Right through the Depression."

September 4, 1998

Figure 5-1 From *The Melrose Mirror* series on the Great Depression

If we analyze the output of *The Melrose Mirror* in terms of McAdams' theory of narrative and generativity, we have ample evidence that to these Silver Stringers telling their stories is a high priority.

When we look at *The Melrose Mirror* of 1999⁸, we can see the maturing of writing styles, the flowering of new talent, and a proliferation of personal stories. The publication is divided into 16 sections⁹ of which eight¹⁰ can definitely be characterized as personal narrative, personal reflection, or an exploration of shared history. A ninth section, Features, contains a mixed bag of types of articles. But of the 127 articles only 32 can be described as being objective

⁸ Visit the Melrose Mirror at <http://silverstringer.media.mit.edu>. You'll also see a link to the *Satter-lights*, another Silver Stringer publication created by a group of seniors in Revere, MA. The *Satter-lights* came online about a year after the group in Melrose. A group of residents (called the *Modem Mavens*) of the Jack Satter House was looking for worthwhile projects using the computers in their new residence's computer room. They found *The Melrose Mirror* online and asked to join the project also. Everything I have said about the Melrose group, apart from specific statistics, can be said to be true for the Revere group as well.

⁹ Features, Tales of the Open Road, Travel, Poetry, Art, Random Thoughts, Looking Ahead (the monthly bulletin of the Melrose Council on Aging), FAQ (Frequently Asked Questions about the Mirror), Food/Recipes, Letters to..., Movies, The Great Depression, Saving \$\$\$ in Retirement, Remembering World War II, Melrose Centennial, City of Homes.

¹⁰ Tales of the Open Road, Travel, Poetry, Art, Random Thoughts, The Great Depression, Remembering WWII, City of Homes.

reporting or notices about current news or events -- all the rest fall into the categories of personal stories, reflection, or community history. Add to those statistics the fact that members have worked hard to learn new skills in using computers and in writing so that they could present the stories to a very wide audience and save them for posterity. I believe that we have a compelling example of late-life adult urge for generativity. Says Kay McCarte, one of the founding members, "We don't see this replacing newspapers, but it lets us be involved in the creative process. It gives us a voice." (quoted in Lasica, 1999)

Active Seniors

Satter-lights

May Holding-A Treasure of the Jack Satter House

Millic Vogel



"I have 9 children, 32 grandchildren, 32 great grandchildren and one more on the way. This will make me a great great grandmother."

This extraordinary statement was made by a lady only 5' tall who is one of the "lights" of the Satter House.

May was born in Revere and has never left it except for a brief foray to fame. One of five children, she always loved swimming and became so proficient in this sport that she entered the Boston American Swim on the Charles River. As a long distance swimmer, she earned several medals, all on an amateur basis.

Long distance swimming was her forte. She entered the Boston Light Swim, a 12 mile route from the Charlestown bridge to the Light. She accomplished this in 6 hours and 14 minutes and beat the record by 53 minutes. She was only 16 years old at that time and for her efforts received a silver cup. In one instance, she rescued a man from drowning with only a Red Cross Lifesaving badge. All her actions were reported by the newspapers at that time and she became known as the Revere Mermaid.

Figure 5-2 From the *Satter-lights* series featuring stories about *Active Seniors*

Socially, the project affords individuals many opportunities for collaboration with other members of the group. At a recent meeting one of the members pointed out, with great pride, that the recent series of articles on Victorian homes in Melrose had involved nearly everyone in the group. Several had helped out with architectural research on the homes. At least two people worked on taking the photographs. Another had helped to create the map. The author wrote the story and was helped by several of the editors in the polishing. One member of the group is a composer and just composed some music for a poem written by one of the group's wittiest poets. A tenor in the group offered to sing the tune for us to record and put on the site. And the group's cartoonist drew a cartoon to accompany the poem.

Personal growth is another enduring result of the Silver Stringers project. One contributor began writing stories about the days of "riding the rails" in his youth during the Depression. He had never been a professional writer – had never

thought of himself as a writer at all. Yet once he began writing down his stories it became clear that here was an untapped talent. He's now preparing his stories to appear in a book. Others have discovered talents and interests in writing, photography, historical research, and even HTML programming.

The Junior Journal

In November of 1998, a new group of Stringers began to use the Silver Stringer software. 92 students between the ages of 9 and 16 visited the Media Lab for a week to participate in the only face-to-face meeting of the Junior Summit participants. The students came from 54 different countries to discuss, distill, and present the ideas that they had been brainstorming about for months in an online electronic forum. The hundred representatives were chosen by election from the larger group of almost 3,000 young people who participated in the Summit. The goal of the Summit has been to "identify and address such issues as child rights, telecommunications access, individual privacy, personal health, environmental responsibility, and world peace, through the eyes of those not blinded by the past and destined to live in the future..."¹¹ One of the activities offered to the participants during the week's visit was to become acquainted with the Silver Stringers software and to decide whether it would afford a vehicle to make their views and ideas public. (The privacy of their online discussion is strictly protected.) The idea was adopted enthusiastically and the founding members quickly gave their new publication a name (*Junior Journal*) and began discussions about the organization, schedule and overall logistics of publishing the journal.

An experimental edition was published during the meeting in November, and an entirely new edition has been published on the first day of every month since January, 1999.¹²

¹¹ The Junior Summit web site: <http://www.jrsummit.net/>. Quote is from the page "About the Junior Summit".

¹² The Junior Journal, <http://journal.jrsummit.net/>

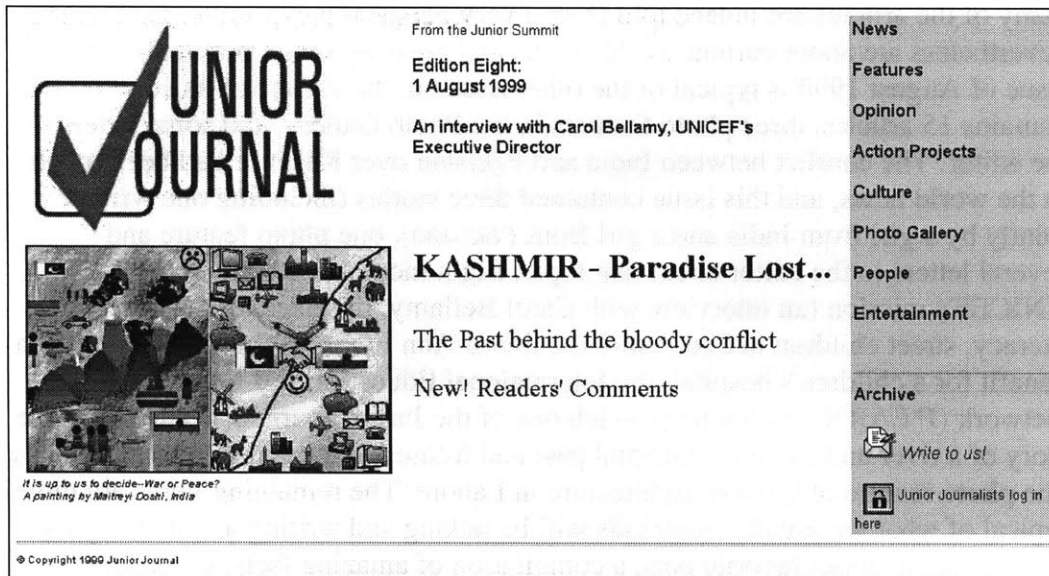


Figure 5-3 The front page of the August 1999 edition of the *Junior Journal*

The social organization of the *Junior Journal* is very different from that of *The Melrose Mirror* or *Satter-lights*. Since the participants are scattered around the world, they conduct all the logistical planning and organizing of new issues entirely on the Junior Summit online email system. They discuss ideas for new stories, plan themes for entire issues, and discuss many policy issues about how the Journal will be managed and designed. In the original planning sessions for the early issues, the children decided that their group of fifteen editors would take rotating monthly turns as "Edition Editor." The edition editor each month makes the ultimate decision (after some discussion among the writers and other editors) about that month's theme and the design of the front page. He or she rallies the contributors and asks for stories to be submitted. Once commitments to write stories are in, the edition editor reminds, cajoles, and sometimes even scolds to make sure that writers and artists send in their contributions. He or she then assigns editors (two for each story) to edit each submission, to prepare for the end-of-the-month publishing deadline.

When the children have a perplexing issue to decide or when they need technical help with the software, adult mentors (about three of us) from NiF are available to provide help. Otherwise, the achievement is entirely theirs. And it is a remarkable social and organizational achievement — for youngsters in this age group to have continued this level of interest for nine months (so far) outside the sustaining environment of a physical organization such as a school or community center. It is also remarkable for the diversity of the participants: in the course of seven monthly issues 58 children from 32 countries participated in the policy and planning discussions. Of the 58 discussants, 50 submitted articles to be published.

Analyzing the content of the stories in the *Junior Journal*, compared to *The Melrose Mirror*, we see what McAdams' theory might lead us to expect. While

many of the articles are indeed told from a very personal perspective, the themes nevertheless are about current world events and pressing social problems. The issue of August 1999 is typical of the other issues in the variety of its content. It contains 15 articles, three photo features in the Photo Gallery, and some letters to the editor. The conflict between India and Pakistan over Kashmir had been much in the world news, and this issue contained three stories (including one written jointly by a girl from India and a girl from Pakistan), one photo feature and several letters to the editor about that topic. Eight more articles are about UNICEF's mission (an interview with Carol Bellamy, the Executive Director), literacy, street children in Sao Paulo, the life of Ann Frank (from an Indian girl), a benefit for a children's hospital, the International Education and Resource Network (I*EARN) conference (which one of the Junior Journalists attended), the story of a river and its environmental past and future, classical dance in India, plus one photo feature of historic architecture in Lahore. The remaining items are more typical of what we usually think kids will be talking and writing about: one photo and one poem about favorite pets, a compilation of amazing facts, a Canadian family vacation, and the medicinal uses of gems (that one was hard to categorize).

The overwhelming number of stories are on topics relating to ideology, exploration of their own and other cultures, and ideas and projects directed toward changing the world. They are exploring their identity and their place in the world. According to McAdams (1993), "We first become self-conscious myth-makers in our late-adolescent years, when we confront head-on the problem of identity in human lives. ... A fundamental challenge in mythmaking in adolescence and young adulthood is to formulate personally meaningful answers to ideological questions so that one's identity can be built on a stable foundation."

MUSIC

Alan Shaw's project, *MUSIC* (Multi-user sessions in community), is relative to my research because it has built tools to empower social construction within a local community. Originally begun in the Four Corners neighborhood of Boston, the project has been expanded to Newark, New Jersey. The system consists of a server and a limited number of clients (18 in the Boston system) hosted on local at-home computers. In the Newark project, the client machines are in the homes of "captains" who agree to share access with least four community members outside the captain's family. The system supports real-time text and voice communication, as well as electronic mail and bulletin board facilities. Participants have used the system for debating community issues, as a publishing vehicle for poetry and drawings, and for organizing events from birthday parties to neighborhood apprenticeship programs. (Bender et al, 1996, Shaw, 1995)

SAGE

Marina Bers' project, *SAGE* (Storytelling Agent Generation Environment), used programmable interactive stuffed animals as a soft interface for children to interact with computers. It used a constructionist approach in which children programmed the storytelling behavior of the toys (the wise storytellers), then had "conversations" with them, telling their own stories and hearing related stories from the "wise storytellers." The focus was on helping individual children to explore their personal identities and on providing a safe place for children to express their fears and fantasies. It was used as a way to help young children begin to think about identity and values, but it was also used in a therapeutic setting with young patients in the cardiac unit at Children's Hospital in Boston (Bers et al, 1998). Although this project did not involve a community activity, it was a pioneer in showing the power of narrative in the realm of social psychology and development. (Bers, 1997).

Kaleidostories

Building on her earlier work exploring the construction of identity and values in *SAGE*, Marina Bers' *Kaleidostories* project creates an online collaborative environment for teenagers to explore those concepts. In this project the technology is Web-based, allowing collaboration among many geographically dispersed participants. The participants build their own areas on the site, similar to home pages, and they populate them with their own stories, descriptions of their role models, and pictures of people and things which are important to them. They can browse others' areas, and a changing kaleidoscope on the site shows them when their role models and values are shared by others on the site. The environment provides ample opportunity for communication among the participants through online discussions and message posting. (Bers, 1999).

6 Community Memory: design and implementation

Community Memory uses Internet technology to offer an enriched form of communication to a community. It brings a community together electronically for the common purpose of building and sharing an archive of memories in the form of an electronic scrapbook. I use the metaphor of a scrapbook to describe the project, since it closely resembles the process of creating a real-life scrapbook or photo album. The purpose of a tangible scrapbook is to preserve the memory of a specific event or progression of events. Families put together albums and scrapbooks to preserve the events that shape that family's history and to fix in memory events and people "as they were then." Other communities may create scrapbooks or more formal archives to preserve the shared history of the group.¹³

I'm interested in probing how adding technology to this familiar process can change and enhance the process and enrich the community. The obvious differences between an electronic and a physical scrapbook present themselves immediately. First, the electronic representation of a scrapbook can multiply its physicality and presence so each observer/participant can essentially share a complete copy of the whole assemblage. Second, unlike the solitary and proprietary authorship of most physical scrapbooks, communication technology can give equal access to authorship to all the members of a community. Contributions from one participant can spur the memories of another thus further enriching the content. Finally and most important, a community can collaborate, communicate, authenticate (and debunk), and share as a group—even if they are geographically dispersed.

Since narrative in both its story and picture forms is one of the richest forms of communication, my aim is to provide a community a virtual space where that narrative form of communication can take place. If people in a community begin with the metaphor of a scrapbook and engage in the task of recording and preserving their shared memories, will they perhaps continue to evolve the metaphor into a new and perhaps more vital form of electronic communication in the future?

Goals and design requirements

My goals in building this system correspond to the three questions I posed earlier, and they provide the guiding principles for the design:

1. Question: Can we use technology to build and strengthen bonds within *physical* communities that are becoming fragmented in our postmodern era?

¹³ I will be using the words *archive* and *scrapbook* interchangeably from here on, since my project's version of archives are humble and vernacular, thus resembling scrapbooks more than archives.

Can such technology actually influence the psychological sense of community?

Goal: Create an infrastructure that will increase the opportunities for the geographically dispersed members of a physical community to communicate more frequently, cheaper, and in a more meaningful way than telephone and postal mail.

2. Question: Can we build technology that will help to strengthen and preserve the shared history of a community? Does the power of a shared history of stories and images translate to the Internet? Can technology facilitate the storytelling process, the image sharing -- and the discussions that come about when sharing is possible?

Goal: Create a virtual space for the collection and creation of personal and group narratives. Create tools for storytelling and sharing pictures and for discussing the stories and pictures as well as the process of sharing them.

3. Question: Can we create technology that is easy enough to use so that we lower the barriers for those who are not comfortable with computer technology?

Goal: Create a system that is both easy to use and robust enough so that even novice computer users can begin to use it with little or no instruction.

The software

The software underlying the Community Memory project creates an interactive, database-supported Web site. It is designed to operate with very simple functionality at first and to be extensible to allow for more ambitious interactions with users and more multimedia capabilities as the program is developed in the future. However, the infrastructure is composed of software that would be easily available to a small community or easily hired from a provider of Web hosting services. The application server that I've used for this thesis project runs on a Pentium PC running the Windows NT Server operating system. It uses an HTTP server, a Java servlet engine, and the Microsoft Access database engine. The entire system could easily be ported to run on UNIX or Linux. One server can host several scrapbook projects (databases).

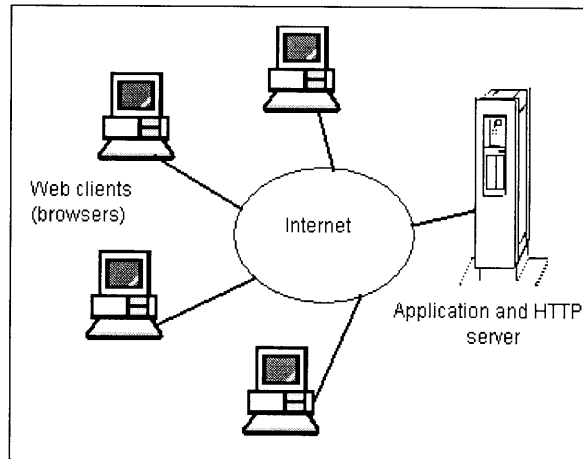


Figure 6-1 Server, clients linked by Internet

The architecture

- The tools are all Web-based to allow community members to participate from anywhere that Internet access is available. It is not necessary for users to install any client applications. Participants need access to the Internet and a Java-enabled Web browser capable of handling forms that upload media files (Netscape versions 4 and higher and Internet Explorer versions 4 and higher).
- The system is written in Java, using Java servlets for communication with the Web server. The HTML pages for the site are a combination of static pages and dynamic pages created by Java servlets. The servlets are common to all the scrapbook databases on the server.
- Content data (text) and data about users is stored in a SQL database so that it can be saved and manipulated easily. The entire database can be saved and moved independently of the application software to allow for maximum program flexibility and evolution. Using a SQL database allows use of standard Java database connectivity (JDBC) classes as well as migration to a different SQL database engine if necessary. A separate database file is created for each scrapbook group.
- Media files that are part of the scrapbook have pointers in the database and are stored externally as files in a directory. Different scrapbook groups have distinct directory paths to store media files.
- Several scrapbook databases can exist on the same server. One set of Java code services all the scrapbooks on a system. Additional databases can easily be added or removed or relocated. If a group wishes to move its scrapbook to a server at another location, the database and media files are easily isolated and moved.

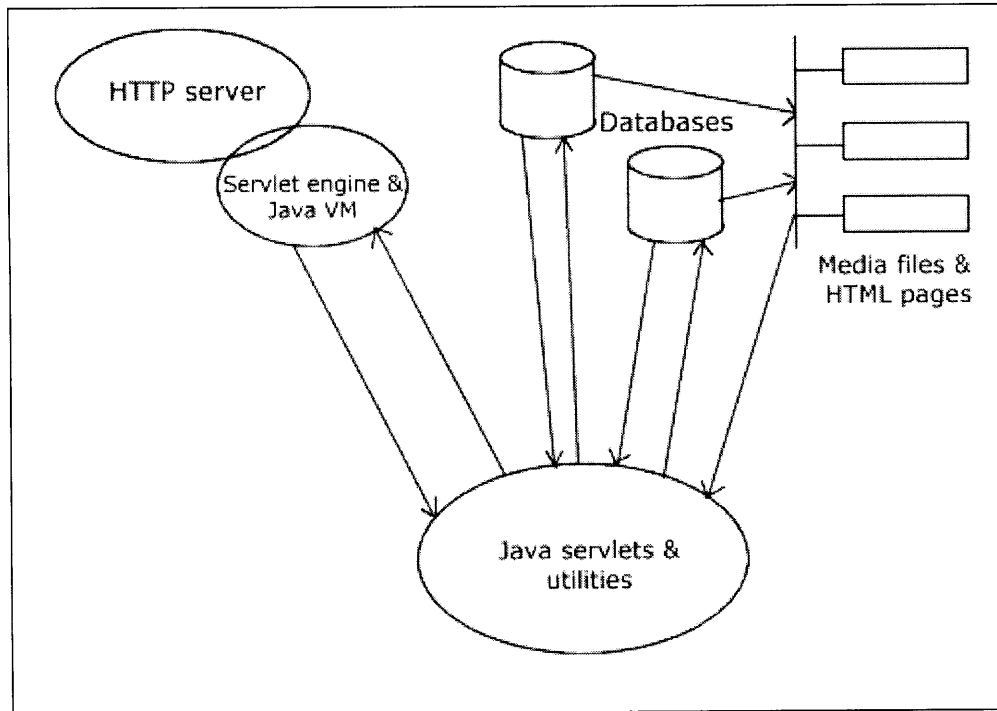


Figure 6-2 Database and application server

Database design

Two important considerations determined my design of the database:

- **Multiple groups.** I wanted to ensure that an application server would be able to host multiple scrapbook groups, and that their databases would remain distinct from each other and easily moved if necessary. This was easily accomplished by using a single database template to create as many database files as there were groups. Using a template ensured that the field names and data types would be uniform across database files, thus allowing the same Java code to be used for all the databases. The media files that are saved to disk also exist as separate directory trees for each scrapbook group so that they can be easily isolated.
- **Standardizing descriptions.** In a small-group environment such as my scrapbook communities it is not practical to employ the type of standardized descriptions that archivists use in working with archival collections of papers and photographs (Bearman 1989, Betz 1982, Dearstyne 1993, Dollar 1992, Parker & Zinkham 1995). However, since the very existence of a digital scrapbook implies strong possibilities for future historical preservation and documentation, I did want to impose at least a minimum standard of description so that the items could be sorted and retrieved by the universally accepted fields of title, author/creator, date of execution (for photographs),

and subject matter (including place names and names of people depicted).

For media items (which at the early phase of the project consist primarily of picture files—photographs and drawings) I included the following descriptive fields: title, author, who (person/people in the picture), what (subject matter), when (was it made), place (where was it made). I also reserved a field for keywords. This is not presently used but may be put to use in the future if the user interface allows it.

For stories I include the fields of title, author, who, and when, but I leave the rest of the subject access to be extracted from text searches on the body of the story. A keywords field is also available for stories.

How the descriptive fields would be presented to the user and to what degree tools like tables of authorities would be used remained a question of user interface design.

Functionality

In order to make the system available to the group as quickly as possible, I decided to create very basic functionality first, and then as participants began using the system I would add more features.

The basic and indispensable functions of the system are:

- **An email list for communication among the members of the group.** Strictly speaking, the email list is not one of the software tools. It is external to the scrapbook and is available to members of the group regardless of whether they are logging into the scrapbook or not. However, it is necessary as a means for members to communicate about their activities within the scrapbook and it is essential when a group is just beginning to get a scrapbook started. It is the means of informing prospective participants that the scrapbook is available, sending information about the access URLs, and for questions and answers about how to get started with the scrapbook.
- **Tools for adding stories and pictures to the database.** Since the users' interface to the system is their Web browser, these are Web forms. Links on the toolbar, *Add a Story* and *Add a Picture*, open the editing form in the browser.
- **Tools for adding comments to stories and pictures already in the database.** When a user views a story or a picture, he or she can click on a link that says, "Add your comment." This brings up an editing form at the top of the browser page, keeping the related story or picture in view below the form, as a reference. For pictures, there is also a link that says, "Add or change

information about this picture.” This allows viewers to add missing information about pictures, or perhaps correct identifications.

- **Tools for browsing the contents of the database.** Links on the toolbar, *To Pictures* and *To Stories*, bring the user to a page listing all the pictures or stories in the database. The default listing is in alphabetical order by title, but users may click on the heading of any column in the display to sort it by that category. Columns displayed are the title, the name of the submitter, the date the item was submitted, and the most recent date of comments added to that item. An icon (the word *New*) flags items that are less than a few days old. The age defined as “new” is configurable and can be changed to suit the frequency with which users add items to that particular scrapbook database. The *New* icon is also added to the Comments column when a comment has been added within the “new” period.

Additional functions that are available now are:

- **A Help file.** A *Help* link on the toolbar brings users to a Frequently Asked Questions (FAQ) file containing explanations about using the tools and other useful information.
- **A Mail page.** This page contains a link to the archive of the group’s email list, as well as links pointing to the email list address and individual email addresses of all the members of the group. The email archive preserves the conversations that take place among members of a scrapbook group and allows new members to review the past history of the email conversations.

Functions that will be added in future:

- **Internal messaging.** The ability to leave messages for others inside the scrapbook, either publicly to the entire group or privately to just one person, is important for promoting more spontaneous interaction among members of the group. The present system of relying entirely on the external email list makes it attractive for many users to simply use the list for communication and not take the additional step of logging into the scrapbook. Whatever communication system is developed should save the messages for future perusal. If chat is added, it should be used to supplement a form of conversation that can be preserved, rather than replace such a form.
- **Tools for making connections among items in the scrapbook.** For any particular story or picture, a user will be able to select other stories or pictures that he or she feels should be connected with the present item. When other users view the item, they will see links to the related items.

- **Tools for creating public Web pages.** Building on the ability to make links among a variety of stories and pictures, users will be able to select stories and pictures to appear together on a Web page that can be made viewable to readers without login access to the scrapbook. This is useful not only for sharing parts of the scrapbook with a larger audience, but also for creating smaller, thematic groupings within the scrapbook.
- **Tools for copying and mailing items in the scrapbook to others outside it.** If a user wishes to share a story or a picture with someone outside the scrapbook, he or she will be able to send it via email.
- **Other tools or functions that users may request.** Much of the functionality being developed or planned for the scrapbook arises from observing how users behave with the system and responding to questions and requests.

User Interface

My design of the user interface was largely determined by the characteristics of the groups that were my users. The groups are described more fully in the next section, but the most important consideration was that many among the groups were novice computer users. The high school reunion group was comprised of about 50 people, most of whom were using computers for the first time, and most of whom were intimidated by the technology to some degree. For many, the only thing they had learned to use was email.

The most important user interface guidelines thus became:

- **Ease of use.** Starting the groups off with an email list was one way of getting people started with a tool they were very likely to be familiar with, their email program. I hoped that would allow people to learn more about the nature of the scrapbook before jumping into the new program. Although the decision to make all the tools Web-based meant that users would have no additional application software to download and install, it also meant that I was forced to operate within the capabilities of universally available Internet browsers. Deciding to depend upon a browser interface was one of the usability trade-offs I had to make.

The advantage of the browser as an interface is that browsers are a tool that even novice computer users must learn to use if they wish to use the Web, which most people do. It is usually the second application that new computer users learn. It is widely available. If a person wishes to participate in the scrapbook and does not have a computer at home, he or she could use a computer at a library, school, or community center. Many publicly available computers have Internet connections and browsers installed. So most of my users would be at least somewhat familiar with their browser and would not have to learn another program. The disadvantage is that I have no control over

which browser or which version a participant is using, nor how the browser is configured. Browsers often present a challenge to new users, particularly when configuration options need to be changed. Furthermore, there is great variability in how different browsers and versions handle the HTML standard and its many extensions, and in their support for Java. Since I was familiar with that particular trade-off in the Silver Stringers software, I decided it was a worthwhile trade: the possibility of some difficult troubleshooting issues against the simplicity of no extra applications and widespread access.

- **Simplicity.** At least for the basic functionality that I introduced to users at the beginning of the project, I decided to stick to simple displays and Web forms. No applets, at least in the beginning. For the extended functionality I will probably have to use applets, since that will be the best way to achieve interactivity using a browser and HTML. My concern, however, goes back to the browser trade-off. I cannot guarantee that users will have enough memory, a stable enough browser, or a fast enough Internet connection to make applets robust.

When a user logs into a scrapbook, he or she sees the welcome page, showing a brief summary of what's new on the site. The welcome page and all subsequent pages have a toolbar on the left. The toolbar remains the same wherever the user navigates on the site. So there is no confusion about where a particular tool can be found—all the tools are available from wherever a user finds herself.

In the earlier section on database design I spoke about creating fields for the description of objects. How to present those fields to the user so that they would accomplish the task of creating a description of the items in the scrapbook and yet not impose an undue burden on the user was an intriguing problem. I first considered small authority tables (lists of standardized terms that a user can choose from) to be shown in drop-down lists on the editing form. To be really useful, however, the lists would have to be augmented by users as new terms were needed. I decide that providing a user interface to make that process really simple and intuitive might be risky with the groups I was working with. As such lists grow, they can become more unwieldy than convenient. Another consideration was to keep the interface informal and not too restrictive. I wanted to encourage people to contribute and to feel free to add as much or as little as they cared to about any particular item. So my final decision was to allow users to enter their own free-form descriptive information about an item and to allow fields to be filled in or left empty, as the user wished.

- **Privacy.** The nature of communication through narrative often involves divulging personal information and private thoughts. The community interactions I was trying to encourage are best accomplished within an atmosphere where the participants feel safe and free from hassle and embarrassment from outsiders to the community. I had decided from the

outset to make each scrapbook site a private site, accessible only to those having a registered login name and password.

Other user interface issues presented themselves as a result of the decision to make the sites private:

- **Registration to obtain login names and passwords.** While I still believe that maintaining privacy is important and necessary, my observation of user behavior showed that the registration and login process creates a hurdle that conflicts with the guideline of ease of use. This seemed particularly true of the user groups that contained more members who were unfamiliar with computers. While a single login name and password for the entire group would have been a possibility, that strategy is not very secure, since the name and password can easily spread beyond the members of the group. Also, it would not allow identification of individuals for the purpose of assigning authorship or ownership authority over some records.
- **Automatic identification of authorship.** Since users identify themselves as they enter the site, it becomes possible to automatically identify the authorship of stories and pictures added to the scrapbooks. The primary intention is to prevent mischievous entry of stories and pictures that might be inappropriate. This is much less likely to happen if each entry's authorship is clearly identified. As each item is added to the scrapbook, the author's identity is extracted from a cookie created when a user logs into the scrapbook. Full name information from the database can thus be linked to the new story or picture record.

Knowing the identity of a user also enables the system to impose restrictions on who can alter or delete an item in the scrapbook. While any user can add comments to any other user's entries, only the original submitter of an item can delete that item. For stories, only the submitter can change the content or description of a story. Other members of the group who might dispute the truth of a story may add their dissension in the form of a comment, but they may not change the author's original text. The treatment of pictures in this regard is handled a bit differently. While only the original submitter may delete the picture or change its title, the identification fields of a picture may be changed by other members of the group. Unlike stories, the people or events depicted in pictures are often unknown to the person who owns the picture. In fact, one reason to share the picture with other members of a scrapbook group would be to solicit information about who is in the picture, why was it taken, or where or when it was taken. Lively discussions can arise in answer to those questions.

As often happens, the need for privacy and security sometimes conflicts with people's wish to remain anonymous. Here again, my observation and

interaction with users while I was developing the system allowed me to change some of my policy decisions as the system was in development. Rather than changing any of the underlying technology, I created a login name (guest) and password that could be used by anyone in the group when he or she wished to make an addition to the scrapbook that would not identify the actual author. Creating such an anonymous user naturally opened up a security risk, since the login name and password were sent to the entire group membership. I decided that creating the anonymous user was worth the security risk, since it would clearly meet an expressed need of the group. Disabling the anonymous user would be easy enough if problems developed.

- **Cookies.** The decision to identify authorship automatically (rather than rely upon participants volunteering their names each time they add an item) raised another technical question which has an important impact on the user interface. Since the HTTP protocol has no ability to maintain information about the user making requests of the server, the developer of a Web site has only a few options available for maintaining persistent information about the user during a HTTP session. (See Hunter, 1998 for a more complete discussion of persistent HTTP sessions.) After experimenting with some Java classes that are intended to implement session persistence and finding that these did not work with many browser versions, I decided to use cookies as a more universally implemented method of preserving session information. Using cookies, however, presented another user interface dilemma and tradeoff. The plus side: the major browsers, Netscape and Internet Explorer, supported cookies in the versions that my users would need. (I had asked users to upgrade to at least version 4 of the browsers, to support the upload of media files via Web forms.) The negative side: users would have to configure their browsers to accept cookies. Browser configuration represents a significant hurdle to many novice computer users, thus conflicting again with my goal of ease of use. I decided to go ahead and use cookies and hope that I could deal with any technical problems users would encounter by providing easy-to-follow instructions in my help file.

A Tour of the Scrapbook

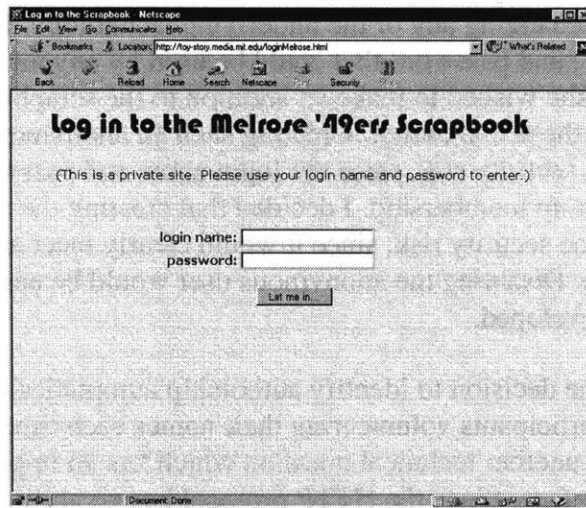


Figure 6-3 The login page

Users open a browser and navigate to the login page. Here they log in, using the name and password they set up when they registered.

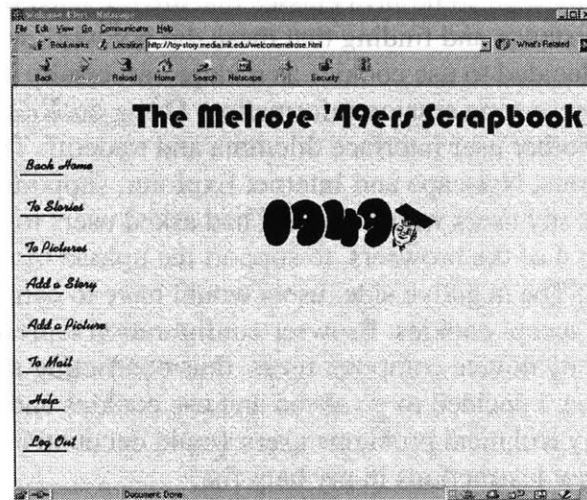


Figure 6-4 The welcome page

Welcome pages for each group can have different designs, to suit the nature of the group. One possible addition to this page could be notices about what's new in the Scrapbook that day, or that week. Another available feature is a list of who's logged in now. After some user testing, I decided not to add that feature, since users seemed confused about why it was there, or what they could do about it.

The toolbar at the left is the universal toolbar—the same tools are available in every window. Since it is in a frame, it is in the same position wherever the user navigates inside the scrapbook.

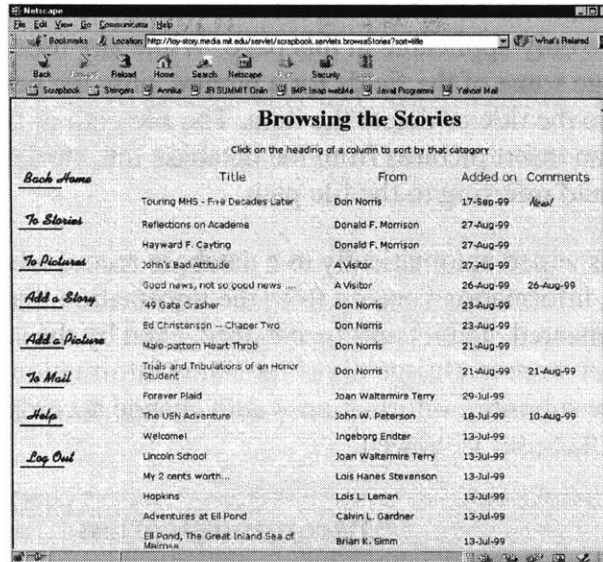


Figure 6-5 Browsing the database

Clicking on *To Pictures* or *To Stories* activates a Java servlet which dynamically generates the window for browsing and the appropriate list from the database. Clicking on the title of an item shows the item and all of the information stored about it. The *New* icon is automatically added to any item that has been added within a few days (the exact period of time can be changed). Likewise, when a comment has been recently added to an item, the *New* icon appears in the Comments column. Otherwise, the date of the most recent comment appears in that column.

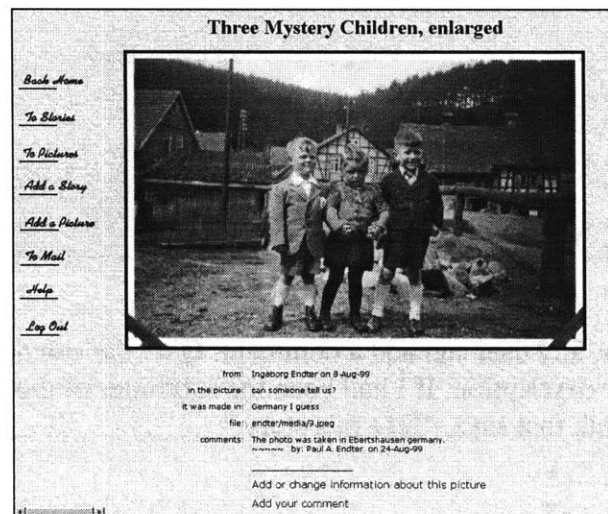


Figure 6-6 Viewing a picture

When a viewer clicks on the title of a picture, a Java servlet retrieves the item and its related information from the database and displays it in another dynamic page. The viewing pages allow users to add comments and in the case of pictures to edit the description to provide new information or perhaps to correct information. The

links for adding comments and changing information are at the bottom of the page, since they are only applicable in this page. While any user may add comments or change some of the fields for a picture, only the person who entered the item can change the title or delete the item. The file path of the picture is also displayed. Users can insert pictures from the database into stories by adding the HTML image tag and referring to the file path.

The "From" field is added automatically to a database record when a user enters an item. The name information is taken from the information that the user entered when she or he registered, and it can't be changed, even by the submitter. However, if the user were to change his or her name information in the registration file, the submitter information would change accordingly when any item submitted by that user is viewed.

The screenshot shows a web page with a title "Miscommunication" in a bold, serif font. On the left side, there is a vertical menu of navigation links: "Back Home", "To Stories", "To Pictures", "Add a Story", "Add a Picture", "To Mail", "Help", and "Log Out", all in a cursive font and underlined. The main content area contains a story text box with a thin border. Below the story text, there are four lines of metadata: "from: Mary O'Reilly on 30-Aug-99", "as originally told by: From a letter I wrote from Dresden", "it's about: Me and my roommates", and "it took place in: June, 1999". At the bottom of the main content area, there is a text input field with the placeholder text "Add your comment to this story".

Miscommunication

So I'm sharing an apartment with four other women... one from India, one from Sweden, and one from former-Soviet Georgia. Since we all speak German with different levels of ability and with different accents, this makes for very bizarre conversations. On the streetcar the other day, the Swedish woman (Carola) asked me if I liked yoga. I said yes and she said something about not having any yoga shoes. I said that in the U.S., we do yoga in bare feet. She looked at me with a puzzled look and politely said (in German) "oh, maybe yoga is good for the feet." I nodded in agreement and a moment later, Carola said "Ah... yogal I was talking about jogging!" Apparently, yoga and jogging sounded alike to her and she had very politely congratulated me on my bizarre practice of jogging barefoot. The Indian woman thought we were talking about yogurt. The woman sitting behind us on the streetcar was in hysterics.

from: Mary O'Reilly on 30-Aug-99
as originally told by: From a letter I wrote from Dresden
it's about: Me and my roommates
it took place in: June, 1999

Add your comment to this story

Figure 6-7 Viewing a story

In the story viewer, any user can add a comment. Only the submitter of a story can edit the text or description. If I had been the submitter of the story above, I would also see a link that says, "Edit this story."

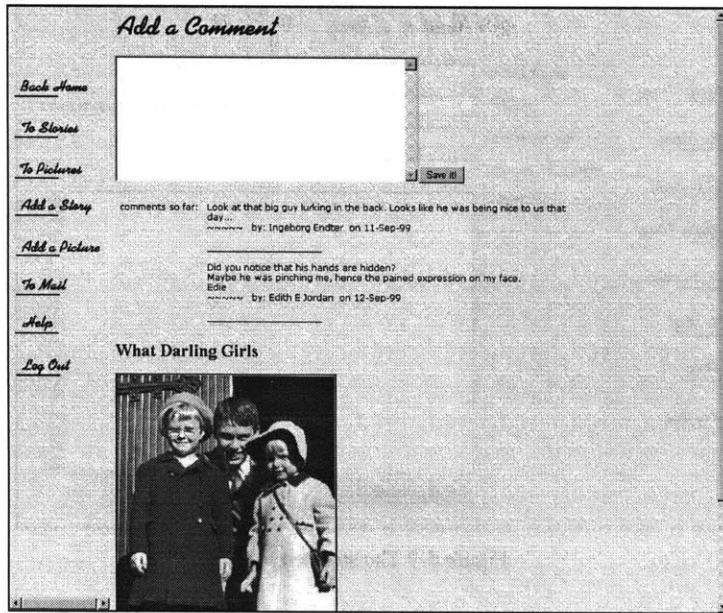


Figure 6-8 Adding a comment to a picture

Clicking on *Add your comment* in a viewing window opens the comment editor (created dynamically by—what else?—a Java servlet). The editing window allows the user to see the comments that have already been created as well as the item that elicited the comment. The window for adding a comment to a story looks similar—the story and the existing comments are shown beneath the box for adding the new comment. Here, too, the submitter is automatically identified and his/her name and the date are added to the comment. The decision to do this was deliberate, because in this case (as in submitting of pictures and stories) I did not want to allow anonymous contributions. I felt that a spirit of openness would better serve collaboration and discussion. (But see the section above, on privacy, for a discussion of the issue of identifying authorship.)

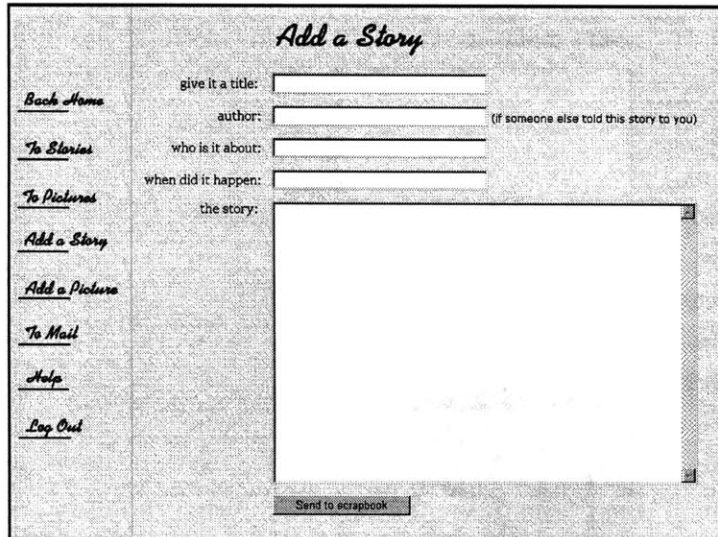


Figure 6-9 The story editor

The windows for adding stories and for adding pictures are Web forms. My software parses the input text of a story to preserve blank lines and spacing as the user has typed them. It is possible to add HTML tags to story text to achieve effects like bold or italic text or even for placing pictures inside stories. The servlet that displays the story wraps the text in HTML code in order to display it in the viewing window.

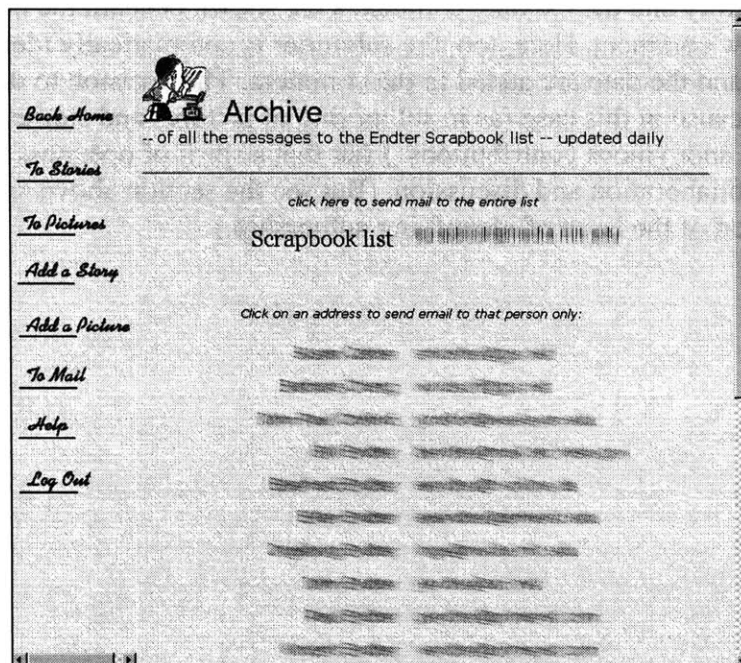


Figure 6-10 The mail page

The connection between the external email list and the scrapbook is the mail page. It contains a link to the email archive so that members of the group always have access to email that has been sent to the list, however old. Users can also send

messages to the list or to any individuals in the group (provided that they have allowed their mail address to be shown on the page) by clicking on the links. In the picture above, the email addresses have been intentionally blurred to protect the privacy of the participants.

Finally, the *Help* link brings a user to the FAQ page, which contains a description of the project, instructions for the basic operations in the scrapbook like adding pictures and stories, and questions and answers that help with frequently encountered problems. The most common question, after “How do I log in?” is “What are cookies and how do I know if my browser will accept them?”

The participants

Even before I set about designing the software, I had to think about what sort of group would want to create a scrapbook online. Since I am investigating technology's impact upon existing communities, I was looking for groups that already shared some common history and whose members were perhaps geographically scattered. The history that they shared had to be sufficiently compelling to the members of the group that making a scrapbook would be an appealing activity. The most obvious type of group would be an extended family.

The Endter extended family

My own family seemed like a good choice. First of all, most of the clan have Internet access. They are scattered from coast to coast in the United States, and two of the cousins in Germany also have email. Over the years the family has become scattered, and, with an East coast contingent, a West coast contingent, and a few in the Midwest, occasions for all of us to meet face-to-face are rare. The result is that nowadays many of us have come to realize that there are many members of the family that we hardly know at all.

The shared history is full of compelling stories. My four siblings and I, since the death of our parents a few years ago, are now the oldest generation. We were born and raised just before, during, and after World War II. Our parents had married here in the United States in 1930 and returned that year to Germany (where my mother's parents were born, and from where my father had come only a few years before). The family stayed in Germany during the war years and returned to the United States shortly after, in two installments: my mother and the four children first, and my father a few years later. A fifth child was born a few years after the family was reunited.

Our children's generation is just far enough removed from the war years to have heard bits and pieces of the family stories, and to be curious about hearing more. A new generation of grandchildren is increasing steadily in numbers, so we are

beginning to think about the need to save the stories and old pictures from *our* parents' generation.

The Endter extended family has five members in my generation: four have Internet access. The next generation has 18 members: 17 have Internet access. The grandchildren are so far still hearing stories on their parents' laps. So from a potential pool of 23 members, 21 are able to participate. We have added two cousins in Germany to bring the total participants to 23. The ages of the participants are diverse, ranging from 64 to 17. They are a very busy group of people: 9 work full-time, 10 have children living at home and at least 7 of the 10 also work part or full-time, 3 are full-time students, 1 is semi-retired. Of the 17 members who registered for the scrapbook, I only know of 2 who are new to using computers.

Even though I am a member of this extended family and I participated in the scrapbook with the rest of the family, in order to be objective, I have excluded my participation from the statistics that I present later. So for the purpose of statistical analysis, I used 22 as the group size.

Melrose High School reunion class of 1949

When I was describing my proposal for this thesis project to the Silver Stringers in Melrose MA, one of the members mentioned that his Melrose High School class was having its 50th reunion this year. In 50 years the class had scattered all over the country and the globe, but he was aware that some members were trying to put together a list of those who had electronic mail. He promised to inquire.

A reunion high school class has many reasons to be interested in making a scrapbook. First, there is the shared history of the high school years, now far enough away to present a compelling focus for looking back over one's adult years and reflecting on "how life was then," how much one has changed, and how much (or little) those years influenced the rest of one's life. Second, there is the opportunity to rekindle old friendships and catch up with the fortunes and misfortunes of those friends and acquaintances whom one hasn't seen, in most cases, for many years.

After a flurry of meetings and email, some of the organizers of the reunion generously shared their email list with me. The list contained about 40 names out of the 225 members of the class who had been located. The reunion committee endorsed the idea, and so we sent email to the 40 class members asking if they would be interested in creating an electronic scrapbook for their reunion. The replies were favorable, so the email list became my second scrapbook community. The ages of the members of this group are quite uniform, since they were all in the same high school class—they are all within a year or two of 67 years old. As the project unfolded more names were added to the list as more alumni with email addresses surfaced. At the time of this writing, the list has 53 people.

Since I received questionnaires from only 15 members of the 53 possible members of the group, I can say very little about the computer familiarity and work status of the group as a whole. Most of the 15 who responded seem to use computers at least a few hours each day. But several members who sent me email and asked for help were new to computer use, and it appears that many more are also unfamiliar. At least several of the members who sent emails to the list were still working, but many are retired.

Getting started

Email lists

One of the essential tools a group will need when working together on a scrapbook is a communication channel. While I was still building the scrapbook software, I decided that the easiest way to get communication flowing would be to use a simple mailing list and get people used to using it while they waited for the scrapbook software. I created a mailing list for each group and used it to tell the people on the list about the scrapbook, and to ask for volunteers to join in building the scrapbooks. At this point I had two email lists—one each for the two groups I mentioned in the above description, but the individuals on the list had never heard about the scrapbook nor formally consented to be a part of the project.

In my first messages to the lists I described the project and asked people to participate. I also asked them to send me email if they wanted to have their name removed from the mailing list. None asked to be removed from the Endter family list. Only one person of the original 40 on the Melrose High School list asked to be removed. I announced that the email list was available and encouraged the members of the list to start using it and start some group discussions. My intention was, first, to get people used to using an email list and, second, to get them used to having multi-person discussions online.

Registration

My design emphasizes privacy for the participants. An important feature of the psychological sense of community is the safety one feels within the group to discuss and perhaps reveal what might seem too personal if discussed in a more public setting. I intended to make each scrapbook site password-protected to enable that privacy. Another advantage of having users identify themselves as they enter is to ensure that only members of the group could add material to the scrapbooks and that authors would be automatically identified.

I announced via the email list that in order to start using the scrapbook, participants would need to register and set up a login name and password for themselves. A web form for registration was available at a specified URL. My intention was to make the form as simple as possible. The form asked people to enter their name, postal address, email address, and a login name and password of their choice. An additional section also asked for information about the computer equipment that people were using or had access to so that I could provide technical help if necessary. That information also helped me to find out how many members of the group had equipment necessary for more advanced multimedia features such as sound recording. The information from the registration form was entered directly into a database table as it was submitted.

I stressed in both the email announcement and on the registration form itself that any information that people submitted would be confidential, and that except for their names, email addresses, and the choice of the login name and password, submitting the rest of the information was optional.

Of the 53 members of the Melrose group, 36 registered for the scrapbook. Most registered on their own, but five people asked me to create a login for them.

Of the 22 members of the Endter group, 16 registered. All registered via the online registration form.

Start-up Questionnaire

Since my thesis contends that participation in this scrapbook project might bring a community closer or strengthen it, I needed to create some mechanism to evaluate whether such an effect actually occurred. Besides my observation of the level and nature of the participation in the scrapbook-building process, I wanted to evaluate the participants' attitudes in some objective fashion. Variables among participants that I wanted to take into consideration or measure in the evaluation process were:

- Level of familiarity with computers
- General attitude toward computers and frequency of use
- Lifestyle—that is, young people with children, retired persons, etc. (in order to take into consideration how much time a person would have available for such an activity)
- Frequency and quality of their interaction with friends and family before the scrapbook project began
- Engagement with community affairs
- Psychological sense of community

Borrowing from a variety of sources I designed a questionnaire that would measure the above variables.

For questions about attitudes toward computers I borrowed from a questionnaire created for community college students (Leite, 1994). For questions about frequency and quality of interaction with friends and family I borrowed from the questionnaire given to participants in the Junior Summit. I judged engagement with community affairs by presenting a list of community organizations and asking whether people were involved with any or all (yes/no responses only). The literature about psychological sense of community contains a number of studies that had created measurement strategies (Burroughs & Eby 1998, Chavis, et al 1986, Hughey, et al 1999, Skjæveland, et al 1996). My questions aimed at measuring psychological sense of community were derived from the *Psychological Sense of Community at Work* scale of Burroughs and Eby (1998). Although it was designed to measure workplace communities, many of the questions were appropriate to the types of communities in my research.

As with the registration form, I stressed both in messages to the email list and on the questionnaire itself that any information that people submitted would be confidential and that filling out the questionnaire was optional. (See a copy of the questionnaire in Appendix A.)

My intention was to administer the questionnaire to each participant before he or she began active participation in the scrapbook. The questionnaire was designed to be a Web form. The form would appear when a participant who had registered logged into the scrapbook for the first time. The data returned by the form was inserted directly into a database table.

Two things quickly became apparent: first, some participants found the process of filling in a relatively lengthy Web form technically daunting, and, second, the rate of registration and start-up was a gradual process within the group. I intended the presentation of the questionnaire at the first login to be a convenient way of "catching" each participant before they got involved in the scrapbook. The timing and placement and its presentation as a Web form were logistical conveniences. I could collect data from a variety of geographically scattered sources without having to send questionnaires by mail and wait for them to be returned. Furthermore, since the data are being collected on a Web form, they could be entered directly into the database.

As it became clear that the process of filling out the questionnaire was actually creating a barrier to entry for some members of the group, I announced on the email list that people could elect to simply print out the form when it appeared and fill it out and send it to me by post—then proceed directly to the scrapbook. Six members of the Melrose group sent me printed copies of the questionnaire. None of the Endter family members chose that option. Finally, I told the participants that they could elect to skip the questionnaire entirely and proceed directly to the scrapbook. Based on messages I received in email, the slow rate of beginning participation, and the numbers of printed questionnaires I received, it was clear that the questionnaire was much more of a barrier to the Melrose group than the Endter group.

By the time I had been hoping to start collecting a second set of data for comparison, some members of the group were still just registering and submitting their start-up questionnaires. 5 1/2 weeks after I had announced that people could start registering and using the scrapbooks I sent a message saying that I had now removed the start-up questionnaire. Anyone registering after that date would not be asked to respond to the questionnaire.

Evaluation of data

The slow start in participation in the scrapbooks, the short time span between start-up and follow-up measures, and the relatively small sample size of respondents made it clear that the questionnaire would not provide meaningful data in the present analysis. The time between when the last start-up questionnaires were submitted and the time I started gathering follow-up data was just six weeks—too short, I decided, to measure changes in attitudes. Of the 45 members of the Melrose group during that period, only 15 completed questionnaires, or 33%. Of the 21 members of the Endter group during the period, 8 completed questionnaires, or 38%. So I decided to abandon my original idea of using a second questionnaire to measure and compare with the first. I feel that the questionnaire is still an important measuring tool, and I hope that it will prove useful in later long-term studies. Valuable data was still available however, in the form of statistics on usage of the scrapbook by the groups. Based on my experience with the start-up questionnaire, I decided that a more successful (albeit more subjective) way of getting data on reactions to the scrapbook and attitudes would be to ask open-ended follow-up questions. I sent these to the email lists and asked people to send me their responses in email. The follow-up questions are listed in Appendix B. I received 18 follow-up responses from the Melrose group (by that time 53 members), or 34%. Six of the Endters (by then 22 members) sent follow-up responses, or 27.3%.

Gathering data on usage meant looking at two modes of interaction, the email list and the scrapbook itself. When I was designing the system I had envisioned that interaction among the members of the groups would follow the pattern of the young people who participate in the *Junior Journal*. In their case, the storytelling activity and making of pictures happens inside the Journal's tool environment. People log in to the system, just as my groups log in to the scrapbook, in order to add their stories and pictures. On the email list they conduct the logistical give and take—quite busy and lively—required to organize the publication of a monthly journal. That is not to say that there are not overlaps—on occasion someone will send an eloquent and thoughtful “story” to the list, but for the most part, there is a distinct functional separation between the email list and the content of the Journal as far as narrative is concerned. I had assumed that in this project I would be looking primarily at scrapbook activity and that the email activity would amount to logistical and “casual” background exchanges.

Soon after the mailing lists were set up there began to be quite a lot of traffic on the Melrose email list and most of the messages contained stories and reminiscences. But the two groups were very different in their use of email—the Endter list had very few messages compared to almost daily traffic on the Melrose list. In addition, I was seeing very little activity (people adding things) on either of the scrapbooks. Clearly, at least for the Melrose group, email was as important a mode for their narrative exercise as I had hoped the scrapbook would be. So I decided to analyze both the email activity and the activity in the scrapbooks, comparing the two modes of interaction, and the use of them by the two groups.

Sources of data

The server log file was used to analyze login activity. The scrapbook software sends a message to the log file each time a person logs in. The login name, database (which corresponds to the group membership), and date and time are recorded.

To analyze email activity I used the archive email files. All email messages to both lists have been archived since the lists were set up.

The database tables contain the information about stories, pictures, and comments, as well as the dates they are added and by whom.

Questionnaire data and registration data are stored in database tables if I need to consider that information.

As I mentioned above in my description of the Endter extended family group, I subtracted my own data from the totals as I made comparisons and analysis. The Endter group totals shown for logins, email messages, and contributions to the scrapbook do not include any by me.

In the following section I make a distinction between email messages that contain stories and those that don't. I didn't use a strict definition of a story (but see McAdams, 1993, pp. 24-27 and other attempts at definitions in Hinchman and Hinchman, 1997), but I considered a message a story if it described an event or a progression of events, a setting, and at least one character. So, a message that says, "Mrs. Jones always terrified me. But in the end I learned a lot about grammar..." would be a story message. But one that said, "I'll be out of town for a few days," or "Can someone please give me driving directions to..." would not qualify.

Comparison of the two groups and the modes of interaction

The data revealed three interesting results:

- The use of email by the two groups differed greatly both in quantity and in style.
- The groups used email as well as the scrapbook for narrative expression. The Melrose group, in particular, told many more stories on the email list than they did in the scrapbook.
- The pattern of scrapbook vs. email list participation was different in the two groups. In the Melrose group, almost as many people logged into the scrapbook as sent email to the list, but those who logged in overlapped only a little with those who sent email. In the Endter group, those who logged in frequently were usually the same people who sent messages to the list.

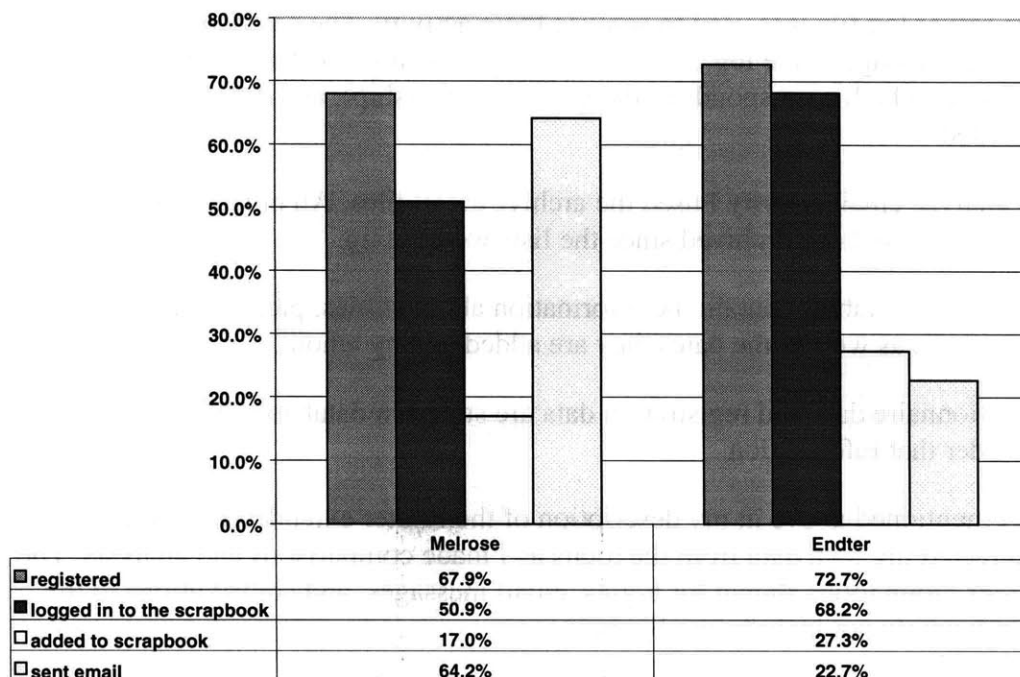


Figure 6-11 Melrose and Endter group compared by activity

Figure 6-11 shows a comparison by percentage of people who registered for the scrapbook (that is, they filled out a form specifying a login name and password), who actually logged in to the scrapbook, who added items or comments to the scrapbook, and who sent email to their group list. The Endter group shows a higher percentage of logins and active participation in the scrapbook. The Melrose group, on the other hand shows a much higher rate of email use—corresponding to what I was observing.

It is important to note that the email lists were set up and people were encouraged to use them ten weeks before the scrapbook software was made available. With constant urging from my original contact in the Melrose group, that group quickly

began to exchange reminiscences on the email list. Only one message was sent to the Endter list during that time¹⁴.

The volume of messages to the Melrose list increased after the scrapbook software was made available (average messages per day before was 1.3 and after was 2.1). Of course, one might expect the volume to increase as a few more people joined the list, and around the actual event of the face-to-face reunion on September 10. Analysis of the content showed that 46% of the messages (109 out of 239) contained reminiscences or stories or updates on people's lives since high school. Many of the reminiscences spurred responses from others, who sent in their own version of events or stories inspired by the original message. Many of the messages formed conversational threads. About half (54) of the "story" messages were sent to the list after the scrapbook was made available¹⁵. The total number of stories added to the scrapbook during that time was only 11.

The Endter group's use of email was much less frequent than Melrose's. All but one of the messages were sent after the scrapbook went online. Looking at the content of the messages showed that five of the 12 could also be classified as stories—less reminiscences like the Melrose group, but several announcements of important events—new babies, a new home, a new dog. Unlike the Melrose list, almost none of these messages got a "conversation" going—there were three instances where a message elicited a short (non-story) response from someone, but the interchange stopped there. Four of the five "story" messages had been sent to the email list after the scrapbook was online, and four stories had been entered into the scrapbook during the same period.

¹⁴ I sent quite a few messages to both lists during that time, giving updates on the progress of the software, and urging people to register—which they were able to do even before the rest of the scrapbook software was available. I did not count any of my own messages in the statistics that I present.

¹⁵ To put the timeline into perspective, here are the notable dates: 3 May 1999—email lists made available; 13 July—scrapbook software went online; 20 August—stopped collecting start-up questionnaires; 10 September—Melrose reunion banquet; 22 September—end of the data gathering period.

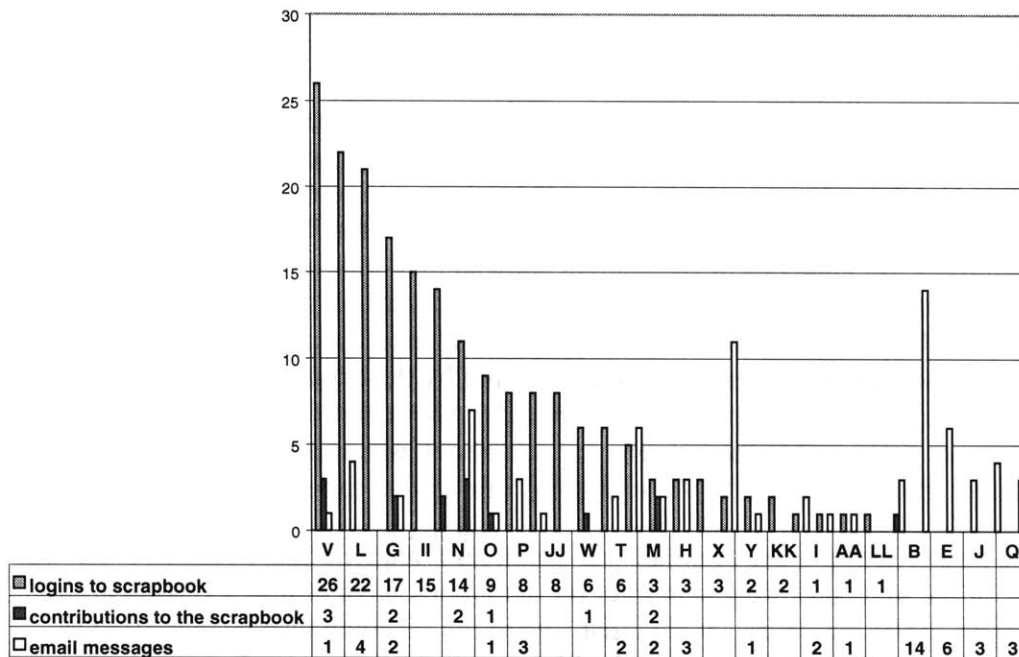


Figure 6-12 Melrose participants: logins to scrapbook compared with email messages

Even though I had thought that few people were “using” the scrapbook, when I analyzed the login activity I discovered that there had been a lot of “lurking” in the scrapbook, notably in the Melrose group. See figure 6-11. Thinking about which people were more comfortable with email and which were undaunted by trying a new program and navigating around in it, I decide to check whether the people who were sending the most email were also the ones who were logging in to the scrapbook.

Figure 6-12 shows all the Melrose people (code letters are used instead of names) who logged into the scrapbook and all the contributors who sent messages to the email list during the same period, sorted by their login frequency. I eliminated from this comparison the one person in the Melrose group who was acting as a catalyst, and who had been sending messages almost daily. His role turned out to be similar to moderators on discussion groups who keep the conversation moving. He also put a lot of items into the scrapbook—some pictures which people had given him to scan, some stories that he had copied from the email list. It is curious that some of the most frequent contributors to the email list never logged into the scrapbook at all, and others only a few times. And conversely, some of the most frequent visitors to the scrapbook rarely, if ever, contributed to the email list.

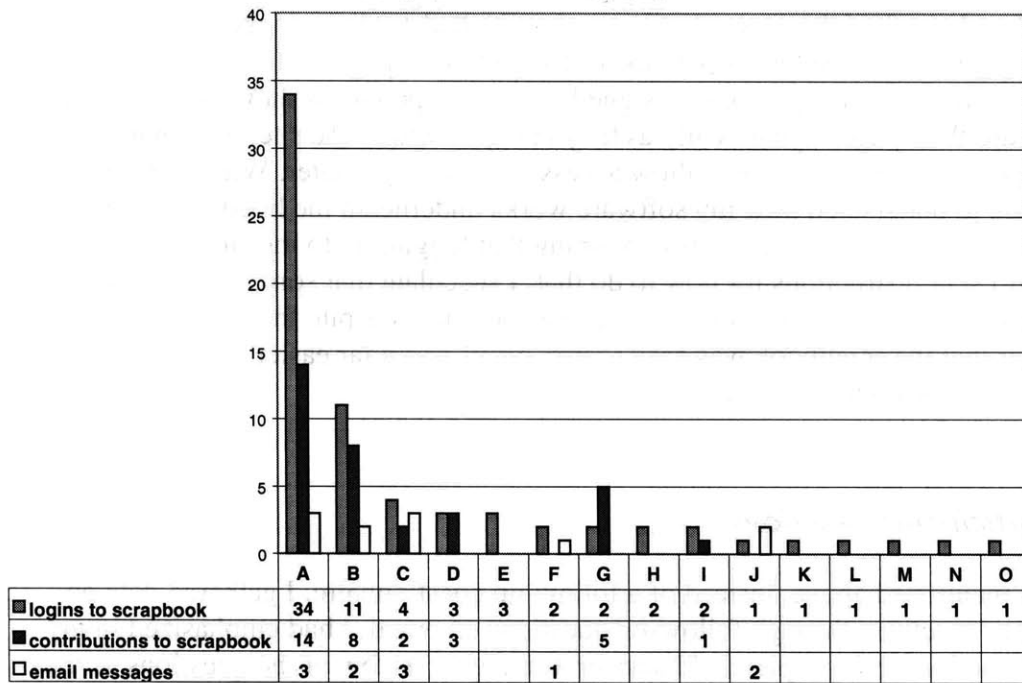


Figure 6-13 Endter participants: logins to scrapbook compared with email messages

Figure 6-13 shows the same statistics for the Endter group for the same period. Unlike the Melrose group, the people in the Endter group who logged in frequently are also the same ones who sent email and who made contributions to the scrapbook.

Email messages that I exchanged privately with members of the groups (primarily requests for technical help) are a useful source of anecdotal data. The combination of the usage patterns and the private emails led me to make an observation about the Melrose group that might shed some light on why they relied so heavily on email for their interactions (this is not true of the Endter group, as least as far as I could discover).

Some people were confused about how email lists work and about the distinction between an email list and a “site” on the Web. An example: at the beginning of the project, several people sent messages saying that they had sent mail to the list, but that it had bounced. I was puzzled, since I had not gotten any bounced messages. While I was investigating possibilities like incorrect addresses on the list, another member of the list figured it out: when people sent a message to the list and then received their own copy back, they assumed that the message had bounced!

I also received quite a lot of email asking me for the “address” of the scrapbook site. I was not surprised that people would forget a URL, but then I learned that some were trying to use the email list address as the URL for getting into the scrapbook. Just getting into the site was problematic for some. One user sent

email saying that she had “tried to get into ‘Pictures’ on the site, and couldn’t.” When I checked the access log I saw that she had not been logged in at all. I can only guess that she had bookmarked that particular page and tried to return to it later. Since the scrapbook is designed to identify people as they log in and then create Web pages dynamically as they navigate within the site, bookmarking pages within the site won’t allow access to those pages later. While I don’t expect users to understand how my software works underneath the hood, I had sent several messages to both lists explaining that logging in to the site is required—and I sent instructions for how to do that. I speculate that some people don’t understand the process. So I believe that for many, despite the reports I received later that the scrapbook was easy to use, email was a far easier and more spontaneous option than the scrapbook.

Participants’ reactions

As mentioned above, instead of a follow-up questionnaire, I gathered data on users’ reactions through follow-up questions on email. I had emphasized in my instructions that people could answer as many or as few of the questions as they liked, or they could just give me their overall impressions. The responses ranged from thorough discussions to a few lines. I also had the opportunity to meet some of the people in the Melrose group in person when I attended their 50th reunion banquet. Both of these methods provided me with users’ direct reaction to their experience with the scrapbook and the email list. Two important areas I was trying to probe were ease of use and participants’ sense of whether this project had an impact on their relationship to this community. I was also curious to learn from those people who hadn’t used the scrapbook, why they didn’t.

The people who had not (or rarely) logged into the scrapbook gave three main reasons why: computer problems (in both groups), small children—no time (Endter group), or they felt that email was good enough (Melrose group).

Almost everyone who answered the question on ease of use said that they thought that the scrapbook was easy and straightforward to use, although a couple of people in each group mentioned that they had problems at the beginning, but found it easy after that. I suspect that the problems at the beginning were either a known problem having to do with my use of cookies¹⁶, or the type I described above, when people couldn’t figure out how to log in. Since I didn’t hear from many people who *didn’t* use the scrapbook, we can only speculate on why they didn’t or couldn’t visit the site.

A further insight into the email vs. scrapbook issue came from two Melrose participants who described their specific preference for one or the other mode.

¹⁶ My software uses cookies in order to maintain session information. If a user’s browser is not configured to accept cookies, the user will get an error when trying to browse the collection of stories or pictures in the database.

The one who wrote about his preference for email said, “the email bulletin board [sic] allows classmates to thoughtfully address each other, casually, without rush, on their schedule; any contact more urgent can be done by phone.” The one who clearly preferred the scrapbook said, “I preferred the scrapbook format to the group eMail list. My principal reason is that eMail demands to be read, whereas the scrapbook invites one to visit. For that reason, I did not mail to the list; my communications were not time-sensitive.” Both of these respondents are familiar with computers and use email frequently. Both made contributions inside the scrapbook. Clearly the two respondents have different preferences for the same reason. At bottom, it appears to be a preference for style of communication.

The questions about whether people enjoyed the project and whether they felt that it changed their attitudes about their community were very informative. Several themes emerged among the Melrose respondents:

- It was good to make contact with friends whom they hadn’t seen or heard from in years. Many mentioned that finding people on the list began private one-to-one exchanges with long-lost friends.

The e-mail program has been wonderful!! I have used it both for messages to 49ers and for personal messages to friends, with most of whom I had no contact for fifty years. Inasmuch as telephoning and writing are no longer options for me, e-mail is my contact with the rest of the world. (from a participant who is housebound with a serious illness)

- The email exchanges helped people to get to know each other better and to feel more comfortable with each other. Since the reunion festivities were near the end of the time that I was collecting data, many people were focused on that event. Those who were planning to attend were getting to know the people whom they would be seeing, and those who couldn’t attend were having a “virtual” reunion on the list. Three people mentioned that participating in the project had convinced them to attend the reunion, several others mentioned that they had already decided to attend, but “it made me all the more excited about coming.”

It made us less strangers and with more in common. Community impressions changed because you felt more comfortable and you had ‘broken the ice.’

Reading all the msgs from classmates brought back a lot of memories some happy and some sad. It made me realize that a lot of folks had the same feelings and concerns, etc. that I have had so the whole line of communication opened up was very beneficial.

For an unfortunate person like me who could not attend the Reunion and being so far away at half way around the world, you really have made the distance only seconds away and made me feel like I was among many of my friends again.

It is interesting to see how people have changed in the last 50 years. Some in ways that I would never have imagined.

After all these years, it was nice to know that most folks really don't change. For the most part you are an adult version of the kid you were.

- The follow-up responses were sent shortly after the reunion activities. Many respondents thought that their face-to-face socializing was a more positive experience because they had gotten to know each other before the event. Others mentioned that the exchange of reminiscences would not have been so successful if there had not been a person who served to catalyze the conversations.

.. because of the scrapbook I felt we all became a closer group long before the reunion festivities began.

Your scrapbook was a joy and continues to be one for me. My reunion with friends was very meaningful and I also visited with lots of folks who I probably would not have chatted with except for [the scrapbook].

I'm not sure how successful this site would have been if it were not for you and Don. .. [he] provided the liaison as well as being willing to bare his soul so that we could all follow suit.

As might be expected from the different way that the Endter group used the email list and the scrapbook, their responses had a different tone than the Melrose group's. The themes that emerged were more diverse, some even contradictory. (Whether the respondents were encouraged or intimidated about sending me, a family member, their frank views of my project is an open question. It is important to bear in mind that this might color their reactions.) Some observations:

- One theme they had in common with the Melrose group was that the scrapbook brings them closer, and helps them to get to know each other better.

Reading the scrapbook made me feel closer to the family, made me remember that I do have an extended family and it feels like I could begin to know them.

The scrapbook helps me feel closer to the Endter family, ..because I haven't had much interaction with [some of] them over the most recent years.

There was one member of the family who had doubts about the viability of the family as a community:

The project has raised some interesting questions in my mind about families and communities. Yes, we are a family in the biological sense of the word, but we are not a community. I suspect our interests, generations, concerns, commitments are so diverse that we would never become a community, either.

- Two of the most active participants stressed the importance of preserving the family's history and our sense of who we are:

I'd like to see this go on- sharing our memories whether they be photos, notes or just as we remembered things creates a better understanding of who we are and where we came from.

I have an interest as to what is happening to our family. Past and present. Also it is a place to store and share some important history for the rest of the family. Many times in our lives we ask boy I wish I would have gotten more details or a particular story from a deceased relative. Well here is a way to preserve those stories.

Discussion and conclusions

Let's revisit the questions this research is trying to answer:

Have we been able to create an infrastructure for communication that strengthens communities and enriches their communication?

Have we created an environment that supports the sharing of stories and pictures and that preserves the shared history of the group?

Have we made it easy enough to use even by computer novices?

The first question must be answered by the responses from the participants in both groups and from conversations that I had with people at the Melrose reunion banquet. That evidence is subjective and anecdotal (see the preceding section for specific data), but certainly many participants felt that their participation in the project strengthened their ties to the community. I believe that the project is at least well on its way to achieving its goal of strengthening a community. The project was running for a relatively short time (the scrapbook was available for 10 weeks when I started evaluating data, the email lists were available since 10 weeks before the scrapbook came online) and I expect that even better results could be obtained after a longer period. A long-term study would allow me to make before and after measurements using the questionnaire I developed.

In studying the data for answers to the second and third questions, two themes emerge. The first is sociological: a reflection on the differences between my two sample communities and how those differences affect their attitude toward the scrapbook and their use of it. The second is technical: since there is evidence that different modes of electronic communication support communication differently for different people, what consequences should this have for further development of this project or for the development of similar ones?

Differences between communities

Observing the interactions within my two sample communities pointed out a number of basic differences in their makeup, their purpose, and their self-definition. If we think back to McMillan and Chavis' (1986) definition of a community, we can say that members of the Melrose group seem to have a sense of belonging, and at least for limited times they could feel that the group has influence and that individuals' needs are met. But their strongest claim to identity

as a community is their shared history. The history that they share is the mere four years that they spent together in high school. Four years, particularly in extremely stressful times like war or adolescence, can certainly be enough to form strong bonds. Many among them also share the common experience of growing up in Melrose, giving them a strong attachment to a specific place. But in 50 years those shared experiences lose significance compared to the new relationships and communities that take their place. In the present moment, we can observe the Melrose group as a community that has coalesced around a specific event—their 50th high school reunion. And that event brings with it an interest in remembering and honoring the four years of their shared history.

The people in the Melrose group were interested in getting reacquainted with each other after a long period of no contact (although some in the group had attended other reunions every five years or so), and the reunion activities were an incentive to do so in a specific time frame. Their conversations and stories on the email list and in the scrapbook mostly revolved around remembering people and places that they had liked or disliked during their high school years. Others looked back at and laughed at the fears and worries that had plagued them during their adolescence (too skinny, too shy, a klutz on the football field). A few also told about what turns their lives had taken in the 50 years since high school. The last two types of story—updating one’s biography and looking back at who we thought we were—bring up an interesting point. I found it curious that a number of people who spoke to me at the reunion banquet mentioned that they loved reading other’s email messages, but that they themselves didn’t send anything because they were afraid of embarrassing themselves in front of the group. No one who sent a written response mentioned this point, except one person who was referring to the others. He said, “We are gregarious but afraid of embarrassing ourselves in public. It takes time, it takes nerve, it takes thought to commit to a group.”

Another feature of the Melrose group’s experience that differed from the Endter group was the fact that one person, my original contact to the reunion class, spent a lot of time and energy sending messages to the list, spurring people on to share their memories. Surely the volume of stories and conversations that this group shared would not have been as great without his participation, or without the face-to-face social event to look forward to. We can also wonder whether the group’s interest in the email list or the scrapbook site will wane now that the face-to-face reunion activities are over.

Trying to address my last two research questions (was it a good story-telling environment, was it easy enough?) in the context of the Melrose group I would say that the group’s interactions were telling:

- Most people in the group found the email list satisfying enough for their narrative purpose. This group has more interest in the spontaneity and give-and-take quality that email affords. The more immediate social interaction is

more compelling than their interest in preserving memories for posterity on a scrapbook site.

- Despite the simplicity of the site itself and the many people who reported that it was easy to use, there seemed to be many others who encountered a barrier in even starting to interact with the scrapbook site. As much as I strive for simplicity in my own software design, I must still deal with the reality that new computer users have a new world to learn about and that much of it is daunting and difficult (and beyond my control). For example, if I consider building a more spontaneous message-board functionality into the scrapbook site, it might help to accommodate the different styles of communication that people prefer. But for groups like the Melrose group, with many novice computer users, would it add complexity that would deter people from participating?

By McMillan and Chavis' definition the Endter group's strongest claim to community status is, like Melrose's, their shared history. However in the Endter's case much of the shared history is in the category of postmemory (Hirsch, 1997), those compelling stories of the years before, during and after World War II that most of them did not experience directly, but only through the parents' stories. An experience that many members of the group did share in recent years was the prolonged illness of Anna Endter (the mother and grandmother of the participants) with Alzheimer's disease. That experience was fraught with emotional trauma for many in the family group, and it may still be too fresh in peoples' memories (or too far buried by the wish to forget) to form a point around which they would want to share their thoughts and feelings. Other than these two emotion-laden periods, the members have little life experience in common.

Unlike the Melrose group, the Endters had no event around which to coalesce. Since most members of the group have not seen or heard from each other for years, and since there are large differences in ages and interests, there is little incentive for them to socialize as a group. The style of the few email exchanges and the content of the stories and pictures are what one might expect of an extended family group that is not very close: updates on new babies, new homes, and evocations of the postmemory that the group does share. While some people in the Melrose group felt awkward or shy about sending email, the Endter group had similar feelings, but for different reasons. One member said, "I would feel uncomfortable using the list for simpler communications--I don't really know these people."

However, the fact that several members of the group said in their responses that they were interested in becoming closer to the group and in getting to know each other better suggests that they think that there is hope that the scrapbook project can help them accomplish that. In contrast to my speculation that the Melrose group's interest in the scrapbook might wane, I believe that the Endter group might begin to use the scrapbook more as time goes on. As the collection of stories and pictures grows, particularly if there is more sharing of contemporary

news about each other, perhaps people will feel more comfortable and really get to know each other.

Addressing my last two research questions in the context of the Endter group:

- This group found the scrapbook a more compelling environment for storytelling than email. In fact, for most of the group, the important feature is *story-listening*. Several respondents were keen to read the stories because they were learning things about the family that they had not know before. There were two threads of interest which seem to be supported well by the scrapbook format: the older generation telling stories to pass down and save, and all the generations keeping up with the population boom in the newer generation. Babies—our own or our grandchildren—have a way of bringing families together.
- Very few people in this group encountered the type of barriers that the Melrose participants had to getting into the scrapbook. From a technical viewpoint, the members of the group were just as comfortable logging into a site on the Web as using email. The only request for improvement: “The one wish I have for the system, I wish it would have a speller.”

Further Work

Analyzing the data from this project raises more questions than it answers. I think the nature of storytelling in the context of a social community calls for a longer term study than I was able to do for this thesis. The possibility, for example, that the Endter family could become a more closely knit group by participating in the scrapbook is obviously of personal interest to me. But I believe that it raises the point that such change takes time, as it takes time for stories to be exchanged and people to assimilate their meanings and to react to each other.

Thinking about the individual differences that became apparent between different modes of communication raises possibilities for future study. I hope this analogy is not too corny, but it seemed to fit my thoughts about the different modes of communication I used in this project. It occurred to me that the people who preferred email exchanges were like actors on a stage. They face their audiences directly (well, almost), and get feedback quickly. Those who preferred the scrapbook environment were like artists who exhibited their work in a gallery. They are not necessarily shy about exhibiting their work, but they usually do not confront their audience directly, personally. Both make important contributions to the narrative tradition. And there must be audiences for both venues. Different demands are made on the theater audience than on the museum-goers, but both are necessary to the process of making art. Studying these different modes of interaction and communication in the scrapbook environment and experimenting with different types and combinations would be an interesting next step.

Finally, the promise of more bandwidth invites the study of voice and video interfaces to a scrapbook environment. To go beyond the browser might be one way to attack some of the difficulties inherent in the desktop computer environment.

7 Bibliography

- Aronson, Sidney H. (1977) "Bell's Electrical Toy: What's the Use? The Sociology of Early Telephone Usage," in Pool (1977), pp. 15-39.
- Barthes, Roland. (1981 trans.) *Camera Lucida, Reflections on Photography*. New York: Hill and Wang.
- Bearman, David. (1989) *Archival Methods*. Archives and Museum Informatics Technical Report, vol. 3 no. 1. Pittsburgh, PA: Archives and Museum Informatics.
- Bellah, Robert N., Madsen, Richard, Sullivan, William M., Swidler, Ann, Tipton, Steven M. (1985) *Habits of the Heart: Individualism and Commitment in American Life*. Berkeley, CA: University of California Press.
- Bender, W., Chesnais, P., Elo, S., Shaw A., Shaw, M. (1996) "Enriching Communities: Harbingers of news in the future," *IBM Systems Journal*, vol. 35, nos. 3&4.
- Benjamin, Walter. (1955) *The Storyteller*. In *Illuminations*. ed. Hannah Arendt , New York: Schocken Books, 1968.
- Bers, M & Ackermann, E.; Cassell, J.; Donegan, B.; Gonzalez-Heydrich, J.; DeMaso, D.; Strohecker, C.; Lualdi, S.; Bromley, D.; Karlin, J. (1998) "Interactive Storytelling Environments: Coping with Cardiac Illness at Boston's Children's Hospital" Published in *CHI'98 Proceedings*, ACM, pp 603-609.
- Bers, M. (1999) "Narrative Construction Kits: Who am I? Who are you? What are we?", in *Proceedings of Narrative Intelligence Fall Symposium*, AAAI '99.
- Bers, M. (1998) "A Constructionist Approach to Values through On-Line Narrative Tools," *ICLS '98 Proceedings*. International Conference of the Learning Sciences, Georgia Tech, Atlanta.
- Bers, Marina Umaschi. (1997) *Soft Interfaces for Interactive Storytelling: Learning about Identity and Communication*. MS thesis, Massachusetts Institute of Technology, Media Laboratory.
- Betz, Elisabeth. (1982) *Graphic Materials: Rules for Describing Original Items and Historical Collections*. Washington, D.C.: Library of Congress.
- Birkerts, Sven. (1994) *The Gutenberg Elegies, The Fate of Reading in an Electronic Age*. Boston, MA: Faber and Faber, Inc.

- Briggs, Asa. (1977) "The Pleasure Telephone: A Chapter in the Prehistory of the Media," in Pool (1977) pp. 40-65.
- Bruckman, Amy. (1991) *The Electronic Scrapbook: Towards an Intelligent Home-Video Editing System*. MS thesis, Massachusetts Institute of Technology, Media Laboratory.
- Bruner, Jerome.(1986) *Actual Minds, Possible Worlds*, Cambridge, MA: Harvard University Press, 1986.
- Burroughs, S.M., & Eby, L.T. (1998), "Psychological sense of community at work: a measurement system and explanatory framework," *Journal of Community Psychology*, 26(6), 509-532.
- Carroll, John M. & Rosson, Mary Beth. (1996) "Developing the Blacksburg Electronic Village," *Communications of the ACM*, vol.39, no.12, December, pp.69-74.
- Chavis, D.M., Hogge, J.H., & McMillan, D.W. (1986), "Sense of community through Brunswick's lens: a first look," *Journal of Community Psychology*, 14, 24-40.
- Cohill, Andrew M. and Kavanaugh, Andrea L. (1997) *Community Networks: Lessons from Blacksburg, Virginia*. Boston MA: Artech House, Inc.
- Coleman, Peter G. (1986) *Ageing and Reminiscence Processes, Social and Clinical Implications*. Chichester: John Wiley & Sons.
- Coles, Robert. (1989) *The Call of Stories: Teaching and the Moral Imagination*. Boston MA: Houghton Mifflin Company
- Dearstyne, Bruce W. (1993) *The Archival Enterprise: Modern Archival Principles, Practices, and Management Techniques*. Chicago: American Library Association.
- Dollar, Charles M. (1992) *Archival Theory and Information Technologies: The Impact of Information Technologies on Archival Principles and Methods*. Informatics and Documentation Series, Oddo Bucci, editor. Macerata, Italy : University of Macerata.
- Don, Abbe. (1990) "Narrative and the Interface," in Laurel (1990) pp. 383-391.
- Driscoll, Jack (1999) "Senior Citizens Take Their News Seriously," *mediainfo.com* (a supplement to *Editor & Publisher* magazine), July.
- Driscoll, John & Endter, Ingeborg (1998) "Silver Stringers: community-centric news." A website describing the Silver Stringer project of the News in the Future consortium at the MIT Media Laboratory. Available HTTP: <http://stringers.media.mit.edu/>

- Erikson, E.H. (1982) *The Life Cycle Completed*. New York: W.W. Norton.
- Fisher, Walter R. (1997) "Narration, Reason, and Community," in Hinchman & Hinchman, 1997.
- Gergen, Kenneth J. and Gergen, Mary M. (1983) "Narratives of the Self," in Hinchman & Hinchman, 1997.
- Grodin, Debra, and Lindlof, Thomas R. eds. (1996) *Constructing the Self in a Mediated World*. Thousand Oaks CA: Sage Publications, Inc.
- Henderson, Bill, ed. (1996) *Minutes of the Lead Pencil Club: Pulling the Plug on the Electronic Revolution*. Wainscott, NY: Pushcart Press.
- Hinchman, Lewis P. and Hinchman, Sandra K. eds. (1997) *Memory, Identity, Community: The Idea of Narrative in the Human Sciences*. Albany NY: State University of New York Press.
- Hirsch, Marianne. (1997) *Family Frames: photography, narrative, and postmemory*. Cambridge, MA: Harvard University Press.
- Hughey, J., Speer, P.W., & Peterson, N.A. (1999), "Sense of community in community organizations: structure of evidence and validity," *Journal of Community Psychology*, 27(1), 97-113.
- Hunter, Jason, and Crawford, William. (1998) *Java Servlet Programming*. Sebastopol, CA: O'Reilly & Associates, Inc.
- Jacobs, Jane. (1961) *The Death and Life of Great American Cities*. New York: Random House.
- Kaufman, Sharon R. (1986) *The Ageless Self: Sources of Meaning in Late Life*. Madison WI: The University of Wisconsin Press.
- Kraut, R., Lundmark, V., Patterson, M., Kiesler, S., Mukopadhyay, T., Scherlis, W. (1998) "Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-Being?" *American Psychologist*, vol. 53, no. 9, 1017-1031.
- Lasica, J.D. (1999) "Citizens as Budding Writers and Editors," *American Journalism Review*, July/August.
- Laurel, Brenda, ed. (1990) *The Art of Human-Computer Interface Design*, Reading, MA: Addison-Wesley Publishing Co.
- Leite, Pedro T. (1994), "College students' attitude toward computers," Study at Butler County Community College. Butler County, PA.
- Marx, Leo. (1964) *The Machine in the Garden, Technology and the pastoral Ideal in America*. London: Oxford University Press.

- MacIntyre, Alasdair. (1984) "The Virtues, the Unity of a Human Life, and the Concept of a Tradition," in Hinchman & Hinchman (1997).
- McAdams, Dan P. and de St. Aubin, Ed, editors. (1998) *Generativity and Adult Development: How and why we care for the next generation*. Washington, DC: American Psychological Association.
- McAdams, Dan P. (1993) *The Stories We Live By: Personal myths and the making of the self*. New York: The Guilford Press.
- McMillan, D.W. (1996) "Sense of Community," *Journal of Community Psychology*, 24, 315-325.
- McMillan, D.W. & Chavis, D.M. (1986), "Sense of community: a definition and theory," *Journal of Community Psychology*, 14, 6-23.
- Mitchell, William J. (1992) *The Reconfigured Eye, Visual Truth in the Post-Photographic Era*. Cambridge MA: MIT Press.
- Meyrowitz, Joshua. (1985) *No Sense of Place, the Impact of Electronic Media on Social Behavior*. New York: Oxford University Press.
- Mumford, Lewis. (1968) *The Urban Prospect*. New York: Harcourt, Brace & World, Inc.
- Newhall, Beaumont. (1964) *The History of Photography*. New York: The Museum of Modern Art.
- Oldenburg, Ray. (1989) *The Great Good Place: Cafés, coffee shops, community centers, beauty parlors, general stores, bars, hangouts and how they get you through the day*. New York: Marlowe and Company.
- Parker, Elisabeth Betz. & Zinkham, Helena. (1995) *Thesaurus for Graphic Materials*. Washington, D.C.: Library of Congress.
- Pool, Ithiel de Sola, ed. (1977) *The Social Impact of the Telephone*. Cambridge MA: The MIT Press.
- Rheingold, Howard. (1993) *The Virtual Community: Homesteading on the Electronic Frontier*. Reading, MA: Addison-Wesley Publishing Co.
- Ritchin, Fred. (1990) *In Our Own Image: The Coming Revolution in Photography. How Computer Technology Is Changing Our View of the World*, New York: Aperture Foundation.
- Rushdie, Salman. (1990) *Haroun and the Sea of Stories*. London: Granta Books.
- Sarason, Seymour B. (1974) *The Psychological Sense of Community: Prospects for a Community Psychology*. San Francisco: Jossey-Bass Publishers.

- Schuler, Doug. (1994) "Community Networks: Building a New Participatory Medium," *Communications of the ACM*, vol. 37, no.1, January, pp.39-51.
- Shaw, Alan. (1995) *Social Construction in the Inner City: Design Environments for Social Development and Urban Renewal*. PhD diss., Massachusetts Institute of Technology, Media Laboratory.
- Shneiderman, Ben, Byrd, Donald, & Croft, W. Bruce. (1998) "Sorting Out Searching: A User-interface Framework for Text Searches," *Communications of the ACM*, vol.41, no.4, April, pp.95-98.
- Skjæveland, O., Gärling, T., & Mæland, J.G. (1996), "A multidimensional measure of neighboring," *American Journal of Community Psychology*, 24(3), 413-435.
- Sontag, Susan. (1977) *On Photography*. New York: Farrar, Straus, and Giroux.
- Stoll, Clifford (1995) *Silicon Snake Oil, Second Thoughts on the Information Highway*. New York: Doubleday.
- Turkle, Sherry. (1995) *Life on the Screen, Identity in the Age of the Internet*. New York: Simon & Schuster.

Appendix A - Start-up Questionnaire

How many hours each week do you use a computer to do the following things:

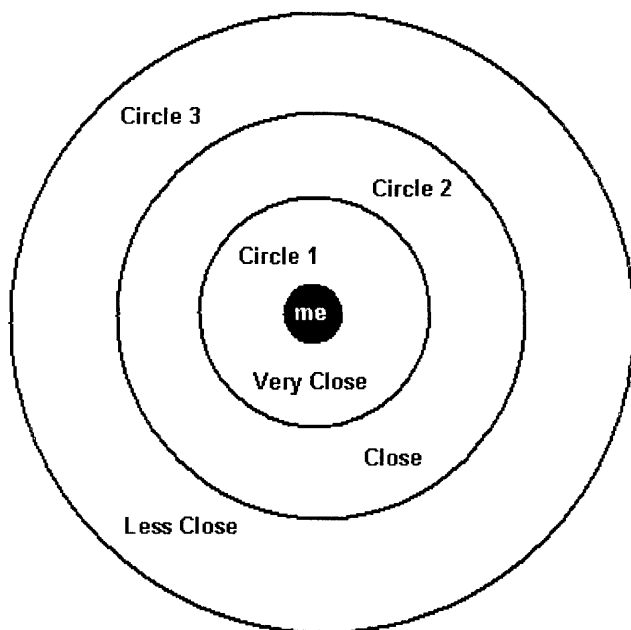
	none	less than 1	1 to 5	6 to 10	more than 10
work at your job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
email (or other communication such as chat)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
explore the Internet (reading news, finding information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
household finance (pay bills, taxes, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
play games, pursue hobbies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other (please specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please share your opinions about the following statements:

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
I am certain I can work well with a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computer people need to get a life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computers are fun machines.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would trust a man more than a woman to figure out how to operate a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Working with computers makes all kinds of work easier.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sometimes I feel computers are out to get me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Internet will help people to communicate with each other better.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Computers are going to dehumanize our society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would trust a person over 50 as much as a teenager to figure out how to operate a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sometimes I'm afraid I'll look dumb if I try to use a computer.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Everyone has a different number of friends and feels close to a different number of people. Some people are closer to members of their family than to people outside the family. Please think about the people you feel close to - those with whom you are friends.

Look at the circle diagram below. Think of yourself as being in the middle of the circle. The next circle, labeled Circle 1, represents the people to whom you feel VERY CLOSE. The middle circle, labeled Circle 2, represents the people to whom you feel CLOSE. The outermost circle, labeled Circle 3, represents the people to whom you feel CLOSE, but not as close as to those in circles 1 and 2.



Think of the people to whom you feel close and for each one, put a number in the box that defines the level of closeness and the category of the friendship. Friendship categories are: family members, neighbors, friends from organizations you belong to, friends from your workplace, and other friends.

For example, you think of your closest friends. Three of them are family members, two are people you work with, and one is a neighbor. Your Circle 1 row would look like this:

	family	neighbors	friends/orgs	friends/work	friends
Circle 1 - Very Close	3	1		2	

(You may want to draw the diagram for yourself on a piece of paper and put names in the circles -- it will help you to answer the questions later.)

Fill in as many as you can think of in ten minutes and then go on to the next question.

	family	neighbors	friends/orgs	friends/work	friends
Circle 1 - Very Close					

Circle 2 - Close					
Circle 3 - Less Close					

What's the most common method that you use to communicate with the people you've entered into the circles in the last question? (fill in the number of people for each method, from each circle.)

For example, say you've put a total of 6 people in Circle 1. Four of them live nearby and you mostly visit them in person. Two of them are farther away and you mostly speak to them on the phone. Your Circle 1 row would look like this:

	visits in person	telephone	email	Internet chat	U.S. mail
Circle 1 - Very Close	4	2			

Your answers:

	visits in person	telephone	email	Internet chat	U.S. mail
Circle 1 - Very Close					
Circle 2 - Close					
Circle 3 - Less Close					

How often do you communicate with friends and family who are close to you?

	few times a year	few times a month	few times a week	daily
Circle 1 - Very Close	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Circle 2 - Close	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Circle 3 - Less Close	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How many people are in your household?	<input type="text"/>
Are there children (under 18) living in your household?	<input type="checkbox"/> Yes <input type="checkbox"/> No
how many?	<input type="text"/>
Do you work or study	
full time?	<input type="checkbox"/>
part-time?	<input type="checkbox"/>
Are you retired ?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Have you been involved with any of the following activities during the past 12 months?

(please check all that apply)

- Church groups or religious organizations
- Business or civic groups
- Youth groups, senior groups, or community centers
- School activities (PTA, volunteer activities)
- Sports clubs or teams
- Charity or welfare organizations
- Cultural groups: theater, music, dance (as a participant, not audience)
- Local neighborhood or political organizations

Think about how you feel about belonging to the group that is sharing this Scrapbook. Please share your opinions about the following statements:

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
Membership in this group is meaningful and valuable to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel loyal to the people in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This group feels like a community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No one in the group responds to what I think is important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a high level of respect for others in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Individual differences are tolerated in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are people who really care about me in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Each person is equally responsible and takes ownership of the success of this group's endeavors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I need some company, I can communicate with someone in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I need help, I can ask someone in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is safe enough to share my successes and strengths with others in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is safe enough to share my personal limitations (e.g. areas in which I lack competency) with others in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

It is safe enough to share difficult emotions (e.g. hurt, loss, fear) with others in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think I agree with most people in this group about what is important in life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spiritual perspectives/dimensions can be talked about in this group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree

Why are you participating in the Scrapbook project?
(please check all that apply)

- it will be fun for me
- I'd like to see pictures and stories from others in the group
- I want to contribute pictures and stories that I have
- I'd like to get to know others in the group better
- I'd like to get to know the group's history better
- I want the memories to be preserved
- I'd like to see the group become closer
- because someone asked me to
- other (please specify):

What do you expect to get out of this project?

Are there any other comments you'd like to make?

9 Appendix B: Follow-up Questions

These questions were sent to the email lists, and responses were returned by email.

- If you never logged into the Scrapbook, why?
- Did you find the Scrapbook hard to use? Easy? Why?
- Did you enjoy the exchanges on the email list? What did it mean to you?
- Did you send messages to the list? Whether yes or no, do you want to say why?
- Did participation in this project influence your decision to attend the reunion? Why? [this question was sent only to the Melrose High School group]
- Did your impressions about your community ({the reunion class | the Endter extended family} -- at least those who were on the email list) change because of your participation in this project? How? (for example, do you feel you know people better, feel more comfortable with them, etc.)
- Do you have any other impressions, reactions, wishes, complaints you'd like to express?