Enabling, Modeling and Interconnecting Active Community Publishers

by

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Abstract

Over the past four years the research described in this thesis has enabled community groups to become collaborative content producers on the Internet. These groups use computer-mediated networking to publish their stories and to enhance the interaction among the community members and their peers in other groups. This research has resulted in a community publishing tool called Pluto and its revision called Goofy that is nearing its completion.

Further, the growth of these communities has led to the need for another system, called SilverWire, to facilitate interaction among communities. SilverWire is a tool for increasing socialization and augmenting communication among communities that actively publish content on the Internet. SilverWire collects and builds models of communities, which form the basis for customized interconnections among communities. Community models are built implicitly by analyzing the contents of the sites that take part in SilverWire and are collected explicitly from questions asked about community purpose, identity and communication. As a result, SilverWire recommends pointers to related community publications and provides comparisons between communities. The goal of the SilverWire system is to be an intermediary that makes communities more aware of other communities doing similar (or interestingly different) work.

To evaluate the project I report in detail the progress of one of the groups called the Silver Stringers, which is a local community consisting of approximately 30 senior citizens. The main impacts of the project for the Silver Stringers have been (1) acquiring a new mindset in becoming media content producers, (2) continuous mental stimulation through learning and creating in a group setting, and (3) increased social interaction.

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1 Introduction

Computer-mediated networking can reinforce existing physical communities and help build entirely new communities [Hiltz and Turoff, 1993; Rheingold, 1993; Schuler, 1994; Cohill & Kavanaugh, 2000]. In a networked society the community boundaries are permeable, interactions and linkages are encouraged, and hierarchies are often flat [Wellman, 1999]. In addition to face-to-face encounters, communicating groups within the networked society use electronic arenas to meet and to participate in joint activities, such as collaborative electronic publishing [Bender et al., 1996; Fischer 1998; Driscoll, 1999].

Currently almost all of computer-mediated networking is conducted over the Internet. The World-Wide Web (or simply the Web) emerged in the 1990's as the most adopted application of the Internet infrastructure. Tim Berners-Lee, the key person behind core Web protocols (HTTP and HTML) and the director of the World-Wide Web consortium (W3C), uses the term intercreativity to describe the collaborative and participative nature of the Web:

We ought to be able not only to find any kind of document on the Web, but also to create any kind of document, easily. We should be able not only to follow links, but to create them – between all sorts of media. We should be able not only to interact with other people, but to create with other people [Berners-Lee, 1999].

A recent estimate, based on Web usage logs collected by Alexa1, stated that in July 1999 there were 10 million content-producing individuals on the Web [Kahle, 1999]. This wealth of resources results in a proliferation of media content of a wide variety of type and quality. In addition to personal home pages that reveal the interests and characteristics of an individual, there exist a large number of Web sites maintained by collaborative groups of individuals. Community publishing (a subset of computer-mediated networking) on the Internet can be defined as "grassroots activity" by groups that produce narrative content for the Web. In contrast to chatting (IRC), bulletin board discussion (Netnews), or role-play (MUDs and MOOs), community publishing is a constructionist activity, specifically aimed at storytelling and sharing experiences in a community setting as well as learning and using new skills regarding publishing.

Computer-mediated networking facilitates the formation of voluntary virtual communities and provides new forms of social interaction and personal exploration. However, the purpose, the style and the quality of interaction in these electronically mediated encounters are often considerably different from the face-to-face encounters to which we are accustomed [Turkle, 1995]. Virtual social ties are often seen as a substitute for physical connections between people. Some researchers have gone so far as to claim that the use of the Internet reduces face-to-face encounters, social involvement and overall psychological well-being [Kraut et al., 1998; Nie and Erbring, 2000].

1 Alexa is a service specializing in collecting information about Web usage and in archiving Web content.
At least in the United States the current upsurge and desire for community connections (both physical and virtual) can be a response to a long-term decline in participation in social associations and activities. Robert Putnam, in his book “Bowling Alone” [Putnam, 2000], claims that shrinking access to this social capital is a serious threat to American civic and public health. As one of the potential cures to reverse this trend, Putnam suggests the use of the Internet:

*The key, in my view, is to find ways in which Internet technology can reinforce rather than supplant place-based, face-to-face, enduring social networks [Putnam, 2000].*

Alan Shaw and Ray Oldenburg have come to similar conclusions regarding the role of electronic communications in reinforcing physical communities [Shaw, 1995; Oldenburg, 1999]. Answering to their calls, this research aims to enable and encourage people to belong to communities of active storytellers and to study whether or not this activity promotes positive social change in their community setting.

### 1.1 Research questions

Community publishing can be approached from the perspective of *connection, construction, and continuity* as defined by Alan Shaw [Shaw, 1995]. How do community members connect to or become engaged in the activity? How do communities define their goals and their identity? How can these communities use technology for constructive purposes in storytelling, self-expression, and collaborative creation? What factors determine continuity of the activity? How does the community learn, evolve and adapt to change? What is the long-term impact of this activity at the individual level and for the society? To begin to answer these questions, the research reported in this thesis explores community publishing by (1) enabling groups to become online publishers, (2) modeling and interconnecting these publishing communities and (3) evaluating the results of community publishing activities.

The first problem space encompasses the enabling processes and tools for the publishing activity. I discuss the design rationale behind the collaborative publishing tools (Pluto and Goofy). Pluto supports an editorial model of electronic publishing in a flexible and customizable package and a simple Web-based user interface. Goofy (successor of Pluto) builds upon the strengths of Pluto while providing scalability, control and visualization of the work flow, separation of content serving from content authoring, and support for multimedia content.

The second problem space includes modeling and interconnecting community publishers. All communities are different; they have personality like individuals, they have differing needs and motivations. Community identity is not just the sum, or the average, of the identities of the community members. Therefore, there is a need for *community modeling* in addition to modeling the individual members of communities (i.e. user modeling). These community models are used in SilverWire, which is a community-based grassroots newswire system. SilverWire collects community profiles and uses them for matchmaking between communities and contextualization of information. The overarching research problem with the SilverWire is to understand how communities of Web content producers can benefit from each other’s activities. In this thesis, I cover three components of this problem
space: (1) definition of community models, (2) implementation for combining automatic content analysis with explicit community profiles, and (3) design of useful augmentations that enhance social networking through the use of the SilverWire. I also explore the possibility of integrating the community publications with other information sources, such as professional news feeds.

The third area of this research is the evaluation of the community publishing activity and the impact of the tools created. I introduce some of the community publishers who have become producers of media content, such as a senior citizen group called the Silver Stringers (http://silverstringer.media.mit.edu/) and the Junior Journalists (http://journal.irsummit.net/), which is a group of children and teenagers located across the globe. I report in detail on the progress of the Silver Stringers over the past four years. I also discuss the social impact of this activity at the individual level and at the community level. Can this technology help in building and strengthening bonds within communities and in reducing social isolation (of senior citizens, especially)?

1.2 Results at a glance

Community publishing

All communities are different: Communities are like individuals; they all have their unique personality [Driscoll, 1999]. The contents and the style of their publication reflect a community’s identity, interests, geography, history, and demographics. The community publishing practices also vary widely across groups.

Support multiple roles and subgroups inside the community: Over time members specialize differently: some specialize in tools and technology, some act as bridge builders between communities, some like to stay on the periphery of the activity, and some typically emerge as leaders taking more responsibility for the full activity. It is important to be prepared to accommodate all these emerging roles.

Provide strong sense of ownership: It should be clear to the community members that it is they who own the publication. The community members should feel that they are fully in control and make the decisions.

Emphasize thinking before publishing: Storytelling and community journalism should be seen as a tool to think with in a group setting. The enabling tools should help support and encourage collaborative editing, commenting, and peer-review.

Tools should be flexible and expandable: Because there is no one size that fits all communities, the members should over time be able to figure out their own publishing processes. This requires that the tools are flexible enough to accommodate the specific needs of each community in terms of organizing the work flow and assigning the tasks and responsibilities among the members.
Community modeling and interconnecting

SilverWire uses both explicit and implicit mechanisms for community modeling. The community models are built along the following three dimensions:

- **Purpose**: What do we do? What do we want to achieve? Whom do we want to reach?
- **Identity**: Who we are? Who we are not? What is our shared history? What are we interested in?
- **Communication**: How do we discuss and debate within the group? What media do we use in this communication?

SilverWire has not yet been evaluated with real communities, but the goals of the system are:

- Making communities better aware of each other and distributing their stories among communities.
- Using community modeling to go beyond the standard “crawl, index and search” approach in finding relevant material.
- Augmenting the community-created content with community profiles and showing comparisons between community profile data.
- Sharing story ideas and publishing practices.
- Enabling and facilitating collaborative creation of stories across community boundaries.

Evaluation of the Silver Stringers community

One of the initial goals of the Silver Stringers project was to tap into the storytelling talent of senior citizens and their desire to pass on their knowledge and wisdom. The enabling tools and infrastructure have provided the Silver Stringers a new channel for telling their stories. The main results of the evaluation of their first four years of activity are the following:

- The abundance of published material, discovery of individual talents and a steady stream of new ideas demonstrate that there is a vast potential for stories to be told and published.
- Collaborative publishing has become an integral part of the weekly routine for 15 members (approximately half of all participants) and the friendly social environment of their weekly face-to-face meetings encourages storytelling, stimulates discussion and facilitates social learning.
- A sense of belonging to the local community has been strengthened and the members feel less socially isolated.
- The attitude switch from consumer to producer has changed the way the Silver Stringers think about the established media.
Questions for further research

There are many issues at the different phases in the community lifecycle which should be studied in more detail. How to get a new group started? What are the implications of the size of the group for the activity? Is it possible to expand the group to hundreds or thousands of collaborators?

The approach for community modeling and community profile comparison should be evaluated and improved. What is the best way to implicitly capture the essence of the community based on its published material? Are the explicit questions in the community profile the right ones to ask? What more sophisticated methods are there for detecting similarities and differences between communities?

The impact of the SilverWire should also be studied. Does the SilverWire answer the scalability problem by creating a “community of communities”? What are the impacts of sharing stories, experiences, and assets across community boundaries? How can the members best utilize the trusted relationships that form between groups that participate in this cross-community resource?

Another area of further research is to study the relationships between traditional information producers and community publishers. How can the professional media better serve these emerging community publishers? What new journalistic forms and practices do active communities enable?
2 Community publications and the SilverWire

2.1 Active community publishers

Silver Stringers

The Silver Stringers project, initiated in 1996 by the MIT Media Lab, is an attempt to understand how electronic tools can enhance community life, especially among the elderly. Senior citizens have a vast store of memories, an understanding of the community dynamics, and a deep-rooted connection to the places where they have lived and worked, and the Silver Stringers project taps into those attributes in developing new paths for community journalism.

The “original” Silver Stringers are based at the Milano Senior Center in Melrose, Massachusetts. This group of 30 senior citizens has published The Melrose Mirror (http://silverstringer.media.mit.edu) on the Web since August 1996. In addition to the stories created by the Silver Stringers, the senior center publishes a printed newsletter Look Ahead that is electronically published as part of The Melrose Mirror.

![Figure 1. Front Page of the May 2000 edition of The Melrose Mirror](image)

The Melrose Mirror edition of May 2000 (Figure 1) demonstrates the variety of writing styles, the flowering of individual talent, and a proliferation of both personal and community-oriented stories. Over the period of past four years, their online publication has grown into a collection of about 750 stories and 900 pictures. Recently they have
started experimenting with audio and video narratives. The publication consists of 18 sections of which eight may be characterized as personal narrative, personal reflection, or exploration of shared history.

The group has regular face-to-face meetings where people come to discuss ideas for future stories and the relationships they have to the larger community of Melrose, to learn about journalism and new technology, and to socialize among peers. For many participants these meetings have become one of the highlights of the week. After four years of publishing, the level of activity and the level of enthusiasm of the members show no signs of slowing down.

**Satter-lights**

Satter-lights ([http://satterlights.media.mit.edu](http://satterlights.media.mit.edu)) is another senior publication which is edited and published in Revere, Massachusetts. The publishers live in a senior citizen complex called the Jack Satter House. Their computing group is called *The Modern Mavens*. They found the Silver Stringers on the Internet and contacted the publishers and the MIT Media Lab to get their own publication started.

![Figure 2. Story about the inter-generational activity in Revere, MA](image-url)
The ideas for stories come from local events, for example those that have been held at the Jack Satter House, and featured stories often include interviews of other inhabitants of the senior complex.

One important goal on the Satter-lights is the inter-generational activity, especially with the local Beachmont Middle School (Figure 2). For example, in this "Team-Up" project, the school children met the seniors, interviewed them, and made posters of the stories they told. The Satter-lights group would also like to exchange material with other Web publishers, including other sites abroad. They already have had contacts with a group in Russia and started the exchange of stories through email.

There are three people on the Satter-lights' editorial committee. For the editorial committee the publication means mostly a new channel for publishing stories and learning the new media. The stories are contributed by a large number of authors living in the building, but they do not actively participate in the publishing process. The editorial committee has tried to engage more people in the editorial meetings, but so far this hasn't been very successful, as there are plenty of other activities for the residents of Jack Satter House.

The editors have taught themselves many aspects of electronic publishing, as MIT Media Lab researchers have not spent as much time with the Satter-lights group as with the Silver Stringers. However, there have been several occasions where the Silver Stringers group has met with the Satter-lights group for socializing, exchange of ideas, and tutoring.

**Junior Journal**

*The Junior Journal* (http://journal.jrsummit.net) is a Web site published by a group of children and teenagers that emerged from the Junior Summit event held at the MIT Media Lab in November, 1998. The majority of stories in the Junior Journal are on topics related to ideology, exploration of their own and other cultures, and ideas and projects directed toward changing the world.

The following statement of goals is posted on the Junior Journal site:

- to prove that new communication technologies can open a new dimension to the way people can work by creating a tool which allows participation from all over the world.
- to join our voices about crucial problems of our world (see for example our special edition about the war or about ecology in the previous months).
- to prove that our cultural and religious differences do not prevent us from working together.
- to create an atmosphere of friendship among all who work here regardless of the physical distance between us.
- to prove that there is another non-traditional way of learning, the one through interaction among us and our advisors.
- perhaps in the future we will be able to show to the world what capabilities children have and what they are able to do if they are allowed to function outside the environment of the traditional school.
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 plan and organize new editions entirely on-line instead of at face-to-face meetings. They discuss electronically the ideas for new stories, plan themes for future editions, and discuss many policy issues regarding how the Junior Journal should be managed, designed, and published.

![Front Page of the May 2000 issue of The Junior Journal](image)

*Figure 3. Front Page of the May 2000 issue of The Junior Journal*

The role of the MIT Media Lab researchers and faculty has been to act as mentors for this group, both in terms of their skills in writing and journalism, as well as in their needs for technical assistance with the publishing.

**Other related groups**

Some other community publishers directly linked with the Silver Stringers project include:

**Danvers Oracle** ([http://danversoracle.media.mit.edu:4000/](http://danversoracle.media.mit.edu:4000/)) – A local site published by a group of senior citizens in Danvers, Massachusetts. Several members of the Silver Stringers group have been active in helping the Danvers group to get started.

**Mummon Kammari** ([http://www.aamulehti.fi/mummonkammari/](http://www.aamulehti.fi/mummonkammari/)) – Motivated by the Silver Stringers project, the Finnish newspaper Aamulehti started an experiment in community publishing in 1997. Mummon Kammari ("Grandma's chamber") is a Web site published from a senior activity center in Tampere. Aamulehti also enabled many other community groups to start publishing, including 25 school Web sites, village newspapers, and local sports clubs.
Comets Online (http://www.cometsonline.com/) – This school site is published at the Gwinnett High School outside Atlanta, Georgia.

Sakura-Sun – The community publishing software was used in a rural village in northern Thailand as part of a larger effort by the MIT Media Lab called the Lighthouse Project.

Nonnionline (http://www.kwscuola.kataweb.it/html/community/giornalini/) – An online publication hosted by KataWeb in Italy, having the seniors as content producers, and with strong emphasis on inter-generational links as the children tutor the elderly to use the computers and the publishing system.

2.2 SilverWire scenario

SilverWire is a “grassroots” newswire system for increasing socialization and augmenting communication among communities that actively publish content on the Web. It is designed to build bridges across community boundaries by comparing the works of groups and by introducing members of these groups to each other.

SilverWire takes its model from a press wire service, as news organizations such as Associated Press and Reuters provide a constant stream of news material to their subscribed customers, who are typically media companies. The approach in SilverWire is more bottom-up benefiting from the richness of existing content on the Web. SilverWire collects relevant stories from known community publishers and redistributes pointers to these stories to other communities. Communities with similar contents and interests are introduced to each other. Comparisons between communities are made based on community profiles.

In addition to the exchange of stories across community boundaries, the SilverWire system is designed to increase the exchange of story ideas, page layout designs, and publishing practices. For example, in the case of local senior
communities we have seen how the community publishers are willing to help each other to get started. One of the goals of the SilverWire is to make this mentoring between communities easier, especially for those geographically separated.

As an example of how SilverWire works, let's consider a member of the Junior Journalists community who decides to write an article on hurricanes. As the draft of the story is saved to the publishing database, the SilverWire prompts that, on September 1, 2000, the Silver Stringers have published many stories under the theme “Hurricane of ’38” (Figure 5). SilverWire would provide a link to the Web site, the email address of community, and other contact information. The system also compares the profile of the Junior Journalists to the Silver Stringers. The writer could also get a wealth of pointers to hurricane-related stories from traditional news sources offered by the SilverWire.
3 Theoretical framework

The purpose of this chapter is to place this research in a theoretical framework, to explain the motivation behind the approach used in creating the tools (chapter 4), and to guide the evaluation of community publishing activity (chapter 5). The terms community and activity are defined as they relate to community publishers. The theories of community of practice and social networking are used as a basis for community modeling and community interconnection. I also discuss how theories of social learning can be applied in the development of enabling tools, and in forming a model for sustainable community publishing activity. Finally, I present a collection of other related projects and implemented systems.

3.1 What is an active community?

Several definitions of community can be found in the social sciences and psychology literature [Sarason, 1974; McMillan and Chavis, 1986; McMillan, 1996], but Thomas Bender's definition of a community perhaps best suits the purposes of this study [Bender, 1982]:

*A community involves a limited number of people in a somewhat restricted social space or network held together by shared understandings and a sense of obligation. Relationships are close, often intimate, and usually face-to-face. Individuals are bound together by affective or emotional ties rather than by a perception of individual self-interest. There is a "we-ness" in a community; one is a member.*

It should be noted that this definition does not preclude communities that do not have face-to-face meetings, such as the Junior Journalists who communicate completely over the electronic media. Instead, the key features implied by Bender — limited membership, shared norms, affective ties, and mutual engagement — can be used as a basis for analyzing the active community publishers.

Community can be successful without being very active. For example, people living in a village can form a tight-knit community, even though there is little visible “community activity,” as community events might be organized only a few times per year. However, in the case of community publishers the level of intensity of the activity is an important indicator of the vitality of the community.

It is also important to reflect on what activity means in this context. Activity theory can be used as a broad theoretical framework for analyzing community publishing. Activity is defined as a coherent, stable, relatively long-term endeavor directed to a definite goal or object. This definition applies well to community publishing where activity is directed to publishing a jointly created Web site.
In his schematic model for activity, Yrjö Engeström [1987] proposes a set of triangular relations, as depicted in Figure 5. The subject (an individual member of a community) is oriented towards accomplishing some object (outward goal, concrete purpose, or objectified motive). In the case of community publishing this object is the collection of stories published on the jointly created Web site. The subject is using an enabling tool, such as Pluto and Goofy, in accomplishing the object. The subject relates to her community via rules (norms, conventions, and social relations). As an example, these rules might include the criteria for membership. The community relates to the object via division of labor. This refers to the organization of processes and practices to accomplishing the object. Engeström's model is used as one of the metrics for the evaluation of the Silver Stringers in chapter 5.

3.2 Communities of practice and social networking

In this thesis, I use the following definitions for different types of community:

- community of proximity: people living or working in a certain area, a family, a geographically-oriented organization,
- community of interest: people with common interests around a topic area, and
- community of practice: people engaged in a common practice with shared goals.

There is no clear-cut division between these types of communities, as a community of interest is often also a community of practice, and local communities tend to become communities of practice. The Silver Stringers group is an example of a community that is both a community of proximity and a community of practice.

Healthy communities

The term “community” is often considered very positively, almost idealistically, as a situation in which people coexist peacefully and mutually support each other [Wenger, 1998]. However, there are typically disagreements, tensions, and conflicts among the members. Differing goals often cause conflicts inside the community, but conflict may sometimes be as important as cooperation in obtaining issue resolutions. Community is not good or bad in itself. Joint goals of the community can also be harmful to the larger community and to the society [Csiksentmihalyi
Community can also be seen as a limitation as it often becomes inward-oriented and even hostile to other groups.

Community is not static – new members can arrive and existing members can leave at any time, but there is a sense of belonging to a group of individuals, and the group is relatively stable [Lave & Wenger, 1991; Wenger, 1998]. In a community of practice engaged members typically know each other. Also, people often simultaneously belong to many communities of practice.

In their study of learning communities, Woodruff et al. [1996] identified four community “glue” factors, without which a healthy community will not develop and thrive: function, identity, discourse, and shared values and interests. In the context of modeling community publishers, I have used a simplified version of these dimensions that characterize the community and its activity: purpose, identity, and communication.

Community purpose encompasses the goals or objectives of the community, the joint enterprise that the members have engaged in. Why do people want to be involved and to participate? What does the community like to promote through the activities it’s engaged in? Not all communities have explicitly specified plans and goals, and some communities are not able to come to an agreement on what these might be. It is rare, however, that a community does not have any definable purpose.

One of the issues with voluntary online communities of interest is that often their members do not make a lasting commitment to the community. William Galston argues that this is mostly due to the lack of mutual obligation, because these communities emphasize personal interests and it is often too easy to choose the option to exit the community as a response to discontent and dissatisfaction [Galston, 1999]. In the case of active community publishers, common goals, mutual obligation, and shared responsibility are significant determinants of community success.

All communities are different; they have personality like individuals, they have differing needs and motivations. Community members learn from one another’s experiences, set common strategies, develop a shared vocabulary, and have common norms and means. As a result the activity evolves into a distinctive and shared way of functioning [Agre, 1998]. Over time, the resulting common practice becomes a bond among the involved individuals and is a basis for community identity. This means more than the sum, or the average, of the identities of the community members. A community is not just an aggregate of people defined by some common characteristics as members with different skill sets and attitudes complement each other.

What makes engagement in practice possible and productive is as much a matter of diversity as it is a matter of homogeneity [Wenger, 1998].

As communities of practice form, they create boundaries for the community and its activities. These boundaries allow the community members to specify who they are, and who they are not. The community identity is reflected in the shared history of the community members, as well as in their principles, values and debated issues.
Community communication can be understood as the evolving script, which creates and sustains the individual within the group. What are the most frequent issues that come up in this discussion? How does the community resolve issues? Are the results of previous discussions available to community members? What channels do communities use in this communication?

Community interconnections

Social networks can be created and supported by computer networks, as they connect people and organizations [Wellman, 1999]. Brown and Duguid [2000] use the term networks of practice for people who work on similar practices, share information resources, and are linked through networks, but who might never get to know each other.

Community boundaries have to be crossed for communities of practice to work together. People who cross the boundaries typically broker learning from one community into another [Wenger, 1998]. Thus, the community boundaries may become learning assets and fertile ground for discussing news, local events, negotiating shared meaning for information, and for creating new knowledge for the benefit of the community.

An important step after the start-up phase of community publishing is to make the communities more aware of what other communities are doing. The real potential of otherwise isolated and sparse community sites is achieved when they are connected. Community members can recommend items of interest to each other. There are trusted networks of connections inside communities and across community boundaries.

Community modeling in the context of this work entails defining a way of describing a community of practice that is involved in a publishing activity. This should be done in a manner that allows comparisons between communities. Although communities have been profiled from several perspectives (for example psychological sense of a community [Chavis et al., 1986] or socio-economic profiles of local communities) there is not much literature on methods regarding community modeling from the point of view of their joint practice.

Specially designed tools that collect and build community models can facilitate the process of building trusted relationships between communities. Barrett and Maglio [1999] use the term intermediary to describe a computational element that lies between an information producer and an information consumer on an information stream. Intermediaries can produce new information by injecting it into the stream, enhance the information that is flowing along the stream, and connect multiple streams. Conceptually, the SilverWire system is a Web intermediary that facilitates and augments the communication between community publishers.

3.3 Applying social learning to community publishing

Many theories of learning and creation of new knowledge emphasize the importance of social environment. This applies to social constructionism [Papert, 1980], mentoring and apprenticeship [Rogoff, 1995], knowledge creation
in a corporate setting [Nonaka & Takeuchi, 1995], and communities of practice as a learning system [Wenger, 1999].

Figure 7 summarizes the key aspects in applying social learning to community publishing. The process is a continuous cycle as the community (1) defines their goals and identifies their needs and capabilities regarding the activity, (2) becomes an environment for social learning, (3) fosters sense of belonging, community identity, and continuity of the activity, and (4) engages in a reflection and renewal process, which leads back to step (1).

![Social learning model for community activity](image)

**Figure 7. Social learning model for community activity, adopted from Etienne Wenger [1999].**

**Identify the goals, needs and capabilities**

The community publishing effort can be started by a group that already exists or by a new community that forms around the activity. The question that should be posed to these existing or forming communities is whether the network technology and community publishing can help them in solving their problems, making them more expressive, adding connectedness and socialization within the larger communities they are part of, and in linking with other communities. The groups decide how they want to organize themselves and how they wish to communicate among the members.

People have different skills in writing, editing, photography, and in using computer hardware and software. The members should map how their existing knowledge can be applied to electronic publishing. This helps in defining the needs for new knowledge regarding the community publishing skills, tools and infrastructure. This is typically achieved through meetings where the possibilities of community publishing are demonstrated in a “show, don’t tell” fashion followed by a brainstorming session.

One part of forming the connection is to decide the rules (including advantages and obligations) for membership [Casalegno, 2000]. This also includes the process of acquiring new members. In community publishing, especially
when the membership is completely voluntary, new members typically join the group by direct knowledge of someone else who is already part of the group.

**Build a social learning system**

Social interaction is a critical component of learning as members are involved in a community of practice [Lave & Wenger, 1991]. In studying Xerox service repair technicians, Orr [1990] found out that technicians rarely relied on the company-provided service manuals when troubleshooting machine problems. Instead they used “war stories” passed from technician to technician in an oral storytelling culture. Orr pointed out the value of these stories in knowledge creation and sharing, noting that they represented an important intellectual resource that the company should capitalize upon.

In community publishing this interaction often takes the form of community narratives. Individual members tell stories to other members of their life experiences and local events, and of their experiences with enabling technology and tools. This situated storytelling results in potential material to be published as well as continuous learning among the members.

There are different types of roles for members in a community of practice: central or peripheral; old-timer or newcomer; central to member’s identity or incidental. Some community members are community innovators and are typically positioned as thought leaders. Rogoff [1995] introduced the term *guided participation* to refer to the mutual involvement of community members and the ways that they communicate and coordinate their joint activity. “Guidance” refers to the direction and instruction offered by other peers and the social practices and values of the community. Different skill sets complement each other and provide ground for tutoring between community members. It is also perfectly possible to participate in the activity without having to fully master new technology and tools and still be a valuable contributor in the community. Brown and Duguid [1991] call this *legitimate peripheral participation*.

In addition to learning that happens inside the community, it is beneficial for the community members to form connections to other groups who engage in a similar practice. This network of practitioners expands the social learning environment by connecting the participating groups across community boundaries.

**Foster community identity and continuity**

Etienne Wenger [1998] identifies three distinct modes of belonging to a community of practice that relate to development of community identity and sustaining the community activity:

- **engagement** – active involvement in the processes of the community and in negotiating shared meaning, accumulating a history of shared experiences,
- **imagination** – reflecting about possibilities for further action, seeing connections between the current practice and future possibilities for the community, and
alignment - coordinating energy of the group and its activities and creating a focus for the community action and keeping the wheels of action rolling.

Pascal Chesnais [2000] introduced the Ability-Support-Effort (ASE) framework for analyzing community participation and the supporting tools for the community activity. Ability refers to the suitability and flexibility of tools to meet the ambitions of the community members. Support refers to the amount of external support required to sustain the activity. Can the community use the tools in a self-supporting fashion? The activity is easier to sustain if no external support is necessary. The final attribute examines the effort the members are willing to make towards using a new technology or participating in the well being of the community. The prospects for continuity of community publishing closely correspond to the level of effort and commitment of the participating members in the activity. On the other hand, a collaborative setting allows individual members to participate with different levels of effort.

Continuity also involves planning ahead for available resources for the activity. Does the community need commercial partners (such as an ISP or a media company) or public support to sustain the activity? Is the partner willing to support the goals of the community? The community should ensure that the partnership does not negatively affect the sense of ownership of the Web site, and that the unique community identity can be preserved and further developed under the partnership arrangement.

Reflect and renew

The development of community publishing activity must be understood as a learning process. One of the lessons learned in our research and in other community publishing projects has been that it is important for the community members to be involved in the planning and design of their community activity and its technical infrastructure to promote commitment and sense of ownership of the results [Smith et al., 2000; Cohill and Kavanaugh, 2000; Mäkinen, 1999].

Communities of practice usually evolve through a combination of outside influence and encouragement, as well as internal initiative and responsiveness [Wenger, 1999]. Often the communities start small and fairly simple. If the community activity gains momentum, the number of participants and the level of ambitiousness can grow. At this stage there is often a need to reflect about the community goals. It is also valuable to look for connections between different groups to reinforce the social learning between communities.

3.4 Related projects and systems

The purpose here is not to present a comprehensive list of related projects, but rather to present other work that best matches the most important goals of the Silver Stringers and the SilverWire projects.
Blacksburg Electronic Village

Blacksburg Electronic Village (http://www.bev.net/) is a project that has formed the most networked geographic community in USA, as 83% of its inhabitants 36,000 use the Internet. The project differs from the Silver Stringers project considerably in its scale and goals. Whereas BEV is an infrastructure that provides an electronic public forum for the whole population of the town, the Silver Stringers project concerns community journalism, storytelling, and small-group social interactions with active and constant participation both online and offline.

The community network can increase social exchange and participation. This has been clearly the case in Blacksburg. In a survey conducted in the BEV project, 22% of the people surveyed replied that they were “more involved in their local community activity since getting on the Internet” [Kavanaugh et al., 2000]. The most important functions for individual BEV members are interpersonal communication, information sharing, and driving the goals of the community members. The desire to learn to use new technology is also an important motive for participation. Smaller communities inside the BEV network have started to collaborate typically because people belong to many communities simultaneously and act as bridge-builders between community members [Mäkinen, 1999].

The BEV Seniors (http://civic.bev.net/seniors/) is a group of senior citizens who have learned to use the computers as part of the larger BEV effort. The emphasis in this project was more on new technology itself and less in collaborative uses of technology. Mostly the usage of the computers and the Internet was done through LISTSERV mailing lists. The senior group also initiated a community history project called Blacksburg Nostalgia (http://miso.cs.vt.edu/nostalgia).

Other related sub-projects of BEV include HistoryBase, which is a Web-based forum for creating material about the history of the town of Blacksburg; MOOsburg a multi-user domain in which the modeled space is isomorphic to the town of Blacksburg, and Virtual School, which aims to link multiple classrooms in collaboration including joint manipulation of shared simulations [Carroll and Rosson, 1998].

MUSIC

Shaw’s Multi User Sessions In Community (MUSIC) project applies social constructionism to the creation of technology that supports real-life activism and participation within a local community. MUSIC is a system designed for strengthening the community ties through a custom-made bulletin board system (BBS) that reflects various aspects of a physical neighborhood. MUSIC has been used to help organize face-to-face interactions among community members.

MUSIC addresses questions concerning how this technology can be used to help the local community stay interdependent [Shaw, 1995]. The project shows that a community network can support the local infrastructure of a typical urban neighborhood. For example, the system was used to discuss and debate community issues, to set up a neighborhood apprenticeship program, and to promote community projects and events.
Locality in the Global Net

Researchers at the University of Tampere’s Locality in the Global Net project run several neighborhood projects in the Tampere and Oulu regions. These Web sites are public-service oriented — they are used to distribute relevant information within the communities and engage community members of all ages in moderated discussions, storytelling, and contests (see http://mansetori.uta.fi).

The local community sites were designed in close cooperation with the neighborhood associations by inviting local residents to open meetings where the idea of going online was introduced and debated. The participants have shared computer resources and have regular meetings. In one of the neighborhoods the local library has been the hub of activity, in another community the room adjacent to a public sauna was used for this purpose.

As this model has been applied in multiple neighborhoods it has become clear that each community has a unique nature. However, some general principles in forming communities apply:

> The exact same pattern was not of course directly applicable everywhere, but the principal steps were the same: exhaustive consultations with the local people and their organizations, the forming of content production groups, finding suitable locations in the neighborhoods, training site maintainers, and organizing special promotion events [Heinonen, 2000].

Kaleidostories

Marina Bers’ Kaleidostories project creates an online collaborative environment for teenagers to explore their personal identity and the identity of their communities. In Kaleidostories the Web-based technology is used to build identity constructions kits [Bers, 1999], 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 others share their role models and values.

Different forms of individual and community identity manifest themselves in community publishing, despite the fact that these sites are not typically built for the purpose of exploration of values and identity. Some of these issues are however related to the Silver Stringers project. Do people purposefully use their Web site for exploring their identities? How is the community identity of the collaborating group reflected on the site?

Electronic Scrapbook

Ingeborg Endter’s community memory project [Endter, 1999] uses a scrapbook metaphor to build an archive that helps to elaborate and preserve shared community memories. The Electronic Scrapbook uses narrative expression, both written stories and photographs, as the tool with which the communities explore their shared history and
identity. The system was used internally in two community settings: in a high school class reunion of senior citizens, and in a geographically dispersed larger family.

Many of the research questions in Electronic Scrapbook project are relevant to more publishing-oriented activity, such as the Silver Stringers project. Can we use community publishing to build and strengthen bonds within physical communities? Can activity using such technology actually influence the psychological sense of community?

Manila

Commercial groupware tools for Web publishing are available with functionality for Web-based community publishing. These tools tend to be commercial and hosted by Internet Service Providers or local media organizations, and enable them to include community sections on their Web sites [Toner, 1999].

Userland’s Manila (http://manila.userland.com) is an application that allows groups of writers, designers and graphic artists to manage their sites through a form-based Web interface. Manila includes powerful customization through templates, navigation, Cascaded Style Sheets (CSS), and JavaScript. The site designer has full control over the HTML code, using templates independent of authors creating stories. The content is separated from form, which allows the site designers to edit page templates independently of writers, photographers and artists, who create stories and place pictures. This approach has also been used in Pluto and Goofy.

Manila is part of a larger content management environment called Frontier. Manila also supports a simple editorial publishing model that includes a managing editor, contributing editors, and members. Similarly, Pluto and Goofy emphasize the role of editorial process. The main difference is that they provide more flexibility in tailoring this process. Goofy also makes the process and the flow of material more visible to community members.

Community Publishing System (CPS)

The developers of KOZ.com (http://www.koz.com) sell software called Community Publishing System (current version is 4.0). Similar to Manila and systems implemented for the Silver Stringers project, CPS is operated using a Web-based interface. The publishers can pick from pre-built templates or create their own templates. Site administrators can decide what information on the site is public and what is reserved for “members only”. From the main page of KOZ.com there are links to many sites for small communities, schools, families, and organizations.

CPS has also simple functionality for connecting Web sites and aggregating content from multiple sites as a network of sites. This is similar to SilverWire’s community news ticker. The “network” of sites is, however, mostly used in the system as a way to make hierarchical relations between the sites as administrator privileges and site preferences can be inherited from a “parent” site.

There are no tools for enabling the editorial process in CPS. All updates are made directly onto the published site.
Active Data Publisher and Active Data Community Exchange

Active Data Publisher by Active Data Exchange (http://www.activedatax.com/) is a software package that combines publishing with content aggregation. The system allows multiple users to update content within defined areas of a Web site through the use of a browser-based content entry tool. The system also supports multiple user accounts with varying permission levels to publish content to different areas of a site. This is similar to Goofy’s approach to provide different levels of access to members of different sub-groups of the community.

The company also has the Active Data Community Exchange Program, which offers tools for community members to share information between sites. The service collects stories from participating Web sites and makes pointers to them accessible from this “umbrella” site. In contrast, the SilverWire system should be thought of more as a resource for participating groups rather than as an umbrella. Also the SilverWire emphasizes explicit and implicit community modeling and can automatically compare participating sites and their contents to make recommendations for related material and for community interconnections.

PLUM

Sara Elo’s PLUM (Peace, Love, and Understanding Machine) [Elo, 1995] extends a news story to improve the reader’s experience and understanding of an otherwise decontextualized news event. A local newspaper has traditionally been one of the cornerstones of community, as it plays an essential part in building community identity. It has also acted as a learning broker by contextualizing information for its readers. For example, local newspapers rely heavily on wire services such as AP or Reuters for news outside their community. However, these wire services do not indicate the relevancy of their articles to the readership’s community. A community news perspective thus “localizes” the story, using knowledge and insight on how to illuminate the story from a local point of view [Elo, 1995].
In neighboring Jiangsu province, 250,000 acres of farmland has been flooded, large numbers of fish farms destroyed and several thousands homes were awash with water, the paper said.

To article

Corimeaion

250,000 acres is equivalent to a circle with a radius of approximately 11 miles, shown on the local map. [Satellite Digital Map]

Figure 8. PLUM map augmentation [Elo, 1996]

PLUM is a text augmentation system for geographical communities, which uses fairly simple rules to make statistical data in the story more relevant for the user. Working with disaster articles, PLUM provides the readers with analogies to their local community to help them understand the significance of things such as death tolls, financial losses, and property damage. It also helps put the disaster into a historical context for both the affected region and the reader’s region.

The user model in PLUM is simple: the system only knows the hometown of the user. However, PLUM has a rich knowledge base of statistical information on these geographical communities and tools to make illustrative comparisons. One example of PLUM’s augmentations is a map overlay that compares the disaster-struck land area with the area of the user’s home community. If the reader lives in the Boston area, an area under a flood in China is compared with a map of the Greater Boston area (Figure 8). In many cases this form of community modeling is preferable instead of individual modeling.

PLUM’s approach to rich community models and news augmentation relates to the SilverWire’s approach to profiling the communities and presenting the information to SilverWire readers.

Remembrance Agent

The Remembrance Agent and other Just-in-Time Information Retrieval systems [Rhodes, 2000] can suggest information relevant to the current usage context and act as augmented associative memory for the user. For example, the word-processor version of the Remembrance Agent (Figure 9) continuously updates a list of documents relevant to what’s being typed or read in a word processing buffer.
The SilverWire system can be used in a similar fashion to the functionality of the Remembrance Agent. For example, the system searches for related stories in other participating SilverWire sites while the user is composing a new story in Goofy.
4 Tools and infrastructure for community publishing

Individuals acquire a new mindset of social creativity when they become active researchers, constructors, and communicators of collaborative knowledge. Empowering individuals with community publishing tools is grounded in the belief that humans (although not all of them, not at all times, not in all contexts) want to act as contributors and designers, and not only consumers, of information [Bender et al., 1996; Fischer, 1998].

To enable active community publishing, the Silver Stringers project took a community-centric approach to journalism by training and equipping members of a group to be reporters, photographers, illustrators, editors, and designers of a Web-based publication. Along the way, the members have learned new skills in writing and journalism, as well as in the use of computers and the Internet.

We have seen communities forge around journalism, creating stories of interest and concern for themselves and their Internet readers. The members of these journalism communities actively engage one another in debate over the content of their stories and, more importantly, the processes that they engage in as media producers. Rather than creating and posting individual Web pages, these communities have established editorial processes to encourage group critiquing and learning [Smith et al., 2000].

The MIT Media Lab has been involved directly in the process of starting communities and keeping them going. These enabling and sustaining roles can be broken down into (1) active and continuous participation in community activity, (2) mentoring the group members regarding new skills in computing, journalism and publishing, (3) building new software publishing tools, and (4) providing hardware and technical assistance for the communities. This outside input and encouragement has been especially important in the start-up phase or when the activity has been slowing down. The community activity has also benefited from MIT Media Lab researchers when the community members have been looking for new potential directions for the activity and when they have wished to make connections to other communities.

For example, the uses of Internet technology in audio-visual storytelling were demonstrated to the Silver Stringers. This resulted in new interesting directions for their activity as they recently started to experiment with video-based content for their publication.

4.1 Community publishing tools

As the Silver Stringer project started in 1996, it became clear that there were no ready-made systems available that would have been suitable for small group Web publishing, so we decided to make a tool ourselves. Since then, our community publishing tools have gone through three major iterations: the original “Silver Stringers software,” Pluto, and Goofy. I have been involved in building the first and the third version. Pluto was developed by Dennis Quan and Ingeborg Endter. At the time of this writing, Pluto is still used as a publishing system. Goofy is in its final stages of development.
The major design goal for the publishing system was to meet the needs of the Silver Stringers and other senior citizens. The enabling tools had to be simple and straightforward. They were developed from the beginning to allow people with little or no computer experience to create Web publications. Most of the original group of Silver Stringers in Melrose had never used a computer before and no one in the group had accessed the Internet before the project.

There are specific needs that should be taken into account when designing user interfaces for the elderly; especially perceptual and motor-sensory skills (poor eyesight, hand-coordination etc.), and special cognitive needs [Rogers et al., 1996]. For example, studies of dual-task performance show that the seniors have problems with dividing their attention among multiple simultaneous tasks. These usability issues were taken into account in the design of tools, although these issues have not been a focus area of this research. Relatively simple adjustments – such as eliminating mouse double-clicking, replacing a mouse with a trackball, and using large type size on the display – can solve many age-related user interface problems. We also experimented with voice input with the Silver Stringers (using IBM Via Voice), but that method was never preferred by the users.

Editorial process

Online publishing is different from traditional publishing in many ways. The online publication does not have to be divided into clearly identifiable published issues, but can also be an evolving collection of published material. The articles can be accessible to the public as soon as they are ready to be published, or they can be put on hold for the next major revision. Material is typically organized in sections, and the number of sections is not limited. New sections can be added, changed, and deleted anytime.

However, even if some of the established models from traditional publishing of newspapers and magazines do not apply to an online publication, most of them still do. Good practices from print journalism – collection of material through interviews, background research and fact-checking, photography, editing of stories, setting the priorities for material, design rules for layouts – are all applicable to electronic community publishing.

Pluto and Goofy are largely based on a traditional model of newspaper publishing process where many contributors send their input to editors who check and revise the submitted material. A typical editorial flow of articles is depicted in Figure 10. The material is usually in the form of articles and images, but it can also be submitted in other digital formats (audio, video, etc.). The core of these systems is the collaborative publishing module where material is submitted, reviewed, and revised. Additional modules handle publishing and archiving.
Before authors can post an article to the Internet, they must first engage in conversation with a collection of editors. Each article that an author creates is submitted to baskets that have associated access and functional controls. As an article moves through the publishing pipeline, it is repeatedly passed between an author’s personal basket and the editor’s basket before being published to the Internet. In this simple example the stories are always in one of the four possible baskets: reporter, editor, published, archived.

Each contributor accesses the publishing system through a personal page, called *home base*. A member logs into the system using a link on the front page of the public Web site. In Pluto and Goofy, the members have a choice of composing stories in their personal basket, attaching images and other media objects to their stories, or sending stories to the editors for review, revision, and eventual publication (Figure 11 and Figure 12).

*Figure 10. Simple editorial process*

*Figure 11. Member's home base in Pluto.*
In the Goofy home base, the member can also see an overview of the contents of shared baskets. This allows the members to get an idea of the current status of the stories they have previously authored and submitted to shared baskets. The goal is also to improve the visibility of the flow of material through the Goofy system and to improve the user's awareness of the current state of the publication process.

The reporter writes a story with the story editor tool accessible from the personal page (Figure 13). The reporter enters the story in a simple form interface. A draft of the story can be saved to the database. The reporter can also preview the story as it would appear in the publication. Preview is especially helpful when experimenting with story layout and HTML coding. When comfortable with the story, the reporter submits it to the editor. The reporter has no way of publishing a story without first submitting the story into a shared basket for peer-review. Once the story goes to the editor, it is under editor's control and the editor can either accept the story to be published, make changes and corrections to it, or send it back to the reporter for revisions.

The editor's basket is visible to the subset of the community members who have been designated as editors. This basket is the container for stories that are being reviewed and revised. From the editor's basket, stories are either sent back to the writer with comments for changes or published on the Web site under a specified section and using a selected page template. After a story has been published for some time, the editor can make a decision to move it to the archives. The system also supports the process of revising and updating a story after it has been published.
One of the main design goals for the tools is that they should allow for collaborative editing, comments, and peer-review. The editing model used in our publishing systems can be seen as a tool to make contributors pay more attention to the quality of their stories, both in their readability and in their content. Therefore, they sacrifice some of the immediacy and interactivity, and instead encourage thinking before publishing.

The section view in Goofy is used to browse the contents of the publication by section (Figure 14). This allows the members to see all stories that have been assigned to a particular section in one view regardless of their current status. The story list can also be filtered to show unpublished, published or archived stories. Section view is also used to create a preview of the site with the latest changes, and for publishing the Web site content as a static version.
Flexibility

The ideal software for community publishing allows unsophisticated groups to easily start publishing, but can also evolve and expand as the group members become more knowledgeable about the tools. Flexibility in terms of required skills, established processes, and site design should be a high priority. Tools should allow the content to be produced in a manner that suits the specific needs of a community. Our goal has been to make tools that the members could shape themselves to fit their evolving practice.

An illustrative example of the flexibility in the system has been the way the groups have decided to assign the responsibility of reviewing and editing the submitted stories. The Silver Stringers have an “editorial committee” consisting of five group members, who meet every week to make decisions regarding their forthcoming issue, and to edit and discuss the stories that are currently in the publishing pipeline. The Junior Journalists decided to adopt a completely different and more distributed model. They decided that their group of fifteen editors would take rotating monthly turns as “Edition Editor.” Each month the edition editor makes the ultimate decision (after discussion among the writers and other editors) about that month’s theme and the design of the front page. He or she asks for contributions from other Junior Journalists and makes sure that enough stories are submitted for the monthly edition. The edition editor then assigns two members to edit each submission to prepare for the end-of-the-month publishing deadline.
In addition to creating and managing content, community members use the publishing system to describe the structure and layout of their site. Page templates are used to express the "look and feel" of different parts of the Web site (front page, section pages, and stories). The members can modify default templates in order to change the design of the site. As the members become more comfortable with the system, they can create new templates from scratch.

Figure 15. Template factory in Goofy

Template factory in Goofy (Figure 15) is a place for creating and changing the page templates, as well as selecting the defaults currently used for the published site. One of the goals of the template factory is to make it is easier for newly established communities to experiment with different page layouts.

Data model in Goofy

The semantics of main parts of the Goofy data model are illustrated in Figure 16.
Publication – Publication is a published Web site, which is a collection of stories. One Goofy database can contain multiple publications. Each publication has its own URL. Members log onto a publication and see only objects of one publication at a time as they are changing the contents of the site.

Section – Publication is divided into sections and stories belong to one or more sections. Every publication has a “front page”.

Story – A story includes the content to be published, which can be a text article, a photo essay, an audio narrative, a video production, or any combination of these.

Basket – Basket is a container of stories that is visible to members who have been assigned to a group that has access to the basket. Baskets are used to organize the editorial process for the publication.

Template – Templates are used for formatting the layout of stories, sections and the front page of the publication. A story can also be published without a template as a self-containing “HTML object”.

Media – Media items are submitted by members to the media library. Media items can be text, images, sounds, video, or other dynamic components such as SMIL for Shockwave files that are referred to in stories.

User – User is a community member with a Goofy account. Users are publication dependent. Members can change the contents of objects that relate to their publication.

Group – Group consists of users. “Administrators” is a special required group. Access rights to baskets and modification rights for templates are defined per group. There are four levels of access rights to basket: write (full access), read (read-only), list (list contents only), and none.
Pluto and Goofy include discussion boards that can be linked to published stories or sections. However, this opportunity for interactivity on the pages has not been utilized by the communities because of unresolved questions about responsibility and liability of the contents on these open discussion forums. The original version of the publishing system included modules for email and chat, but, with the proliferation of free email systems, mailing lists, and chat rooms it no longer made sense to include them in the community publishing package.

Implementation

Most of the functionality is carried out at a server that has a central database of all material. All server functionality can be controlled using a Web interface consisting of dynamically created HTML pages and Java servlets. The users can send media objects such as image, audio and video files to the server using the Web browser’s upload feature. These objects are stored at the server and can be then addressed in the stories.

Pluto and Goofy have both been written in Java with portability and modularity in mind. The Pluto system is a standalone package, which consists of a data server and servlet server. The data server in Pluto handles the back-end functionality of the system. It consists of an object store, a Scheme interpreter, and name and directory services. The object store is a database that utilizes Dtype dynamic data structures for storing Pluto media objects [Abramson, 1992]. Dtype is a simple network protocol for exchanging LISP-like objects. They were designed for situations where there is routine use of data structures with complex interconnections. They include basic elements such as numbers and text arrays as well as extensions to special-purpose data types. The protocol is easy to implement, has low computational overhead, and is low-bandwidth, extensible, human-readable, and robust. The Scheme interpreter is used, for example, in the implementation of the dynamic components of page templates.

The servlet server in Pluto includes a page generator that requests data objects from the data server and creates pages dynamically, using templates that have embedded Scheme code. Pluto also functions as the HTTP server for page requests. This enables dynamically generated content, including form processing. The same server is used both to display the contents of the Web site and to provide the interface for collaborative publishing. The Dtype approach provides a lightweight yet powerful implementation for storing Pluto objects. However, a more robust implementation for database transactions is needed to support high-volume sites. This has been one of the design goals of Goofy as it should be easy and scalable to maintain a large number of publications on a single server machine.

The overall system architecture of Goofy is shown in Figure 17. Goofy is implemented with Java 2 Enterprise Edition (J2EE), which is designed for building large-scale database-backed Web applications. The key components of the system infrastructure are the Java Server Pages (JSP) and Enterprise JavaBeans (EJB). EJBs handle the “business methods” of database access in Goofy. The underlying database can be any relational database, which is accessible through Java Database Connectivity (JDBC) interface.
There is a separation between member-accessible functionality and reader access to the sites. Only members are able to access the database directly, and this dynamic access to the database is handled by JSPs and EJBs. Typical reader access of requesting a Web page is served from a pre-compiled static version of the site using standard HTTP protocol. The goal of this separation of content serving from content authoring in Goofy is to further enhance the overall scalability of the architecture.

The users are authenticated and authorized with Java Naming and Directory Interface (JNDI) that is included in the J2EE platform. This service handles user-level access management to Goofy objects. Goofy handles the group-level access management internally in the system, including different levels of access to baskets and rights to change default page templates.

Goofy is designed to benefit from emerging XML standards [Lie and Saarela, 1999] for tagging news-like content such as XMLNews\(^2\), which is a subset of News Industry Text Format (NITF)\(^3\). XMLNews is divided in XML-Story and XML-Meta that are used respectively internally in Goofy to represent the embedded story markup and story metadata.

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\(^2\) XMLNews specification is available at [http://www.xmlnews.org](http://www.xmlnews.org)

\(^3\) NITF can be found at [http://www.iptc.org](http://www.iptc.org)
Goofy is also designed to support managing and previewing audio and video objects within the publishing system, and especially to support SMIL notation for synchronized multimedia presentations. At the time of this writing, this support for easily composing and managing multimedia objects inside Goofy has not yet been implemented.

4.2 SilverWire

The SilverWire is a community-based grassroots newswire system that builds bridges across community boundaries by comparing and disseminating the works of different community publishers. In addition to sharing and mediating stories, the system is designed for encouraging discussion between members of different communities on published stories, new story ideas, collaborative projects, page designs, and publishing practices.

![Diagram of SilverWire](image)

Figure 18. Main functionality of the SilverWire

In the SilverWire, community models consist of both implicitly and explicitly gathered information. SilverWire is a centralized system that collects Web pages containing the stories from participating groups, analyzes these pages to form implicit profiles of these groups, and collects explicit community profiles through community questionnaires. SilverWire monitors community publications and makes comparisons among communities and the stories they have published (Figure 18).

The SilverWire is implemented as a modular system (Figure 19). A Web crawler collects stories from participating community publications, and stores them to a central story database. An implicit community profiler analyzes these stories in building and maintaining a community model. This implicit profile is combined with explicit profile information entered and maintained by the community members. The contents of the databases, and rules of the Web crawler are maintained by an administration module. The SilverWire stories and community profiles are used by story augmentation agents, story recommendation engine, and community profile comparison module. The results are displayed in SilverWire's three Web interfaces: augmented story, community news ticker, and community comparison screen.
Web crawler

Web crawlers are programs that browse the Web unassisted, and follow links and process pages in a largely autonomous fashion. The SilverWire includes a Web crawler that monitors the participating sites for changes as defined as the collection of participating community sites in the SilverWire. This collection of URLs to be monitored is gathered in the group profile forms that are filled by the participating communities. As a result the Web crawler makes a rough conversion of found links into XMLNews DTD and stores this page locally in a relational database.

Since the URL space is limited, the agent is more concerned in finding the changes and local additions in these Web addresses rather than exploring and discovering new interesting sites on the Web through links available on Web pages. The functionality of the SilverWire Web crawler resembles Web page change alerts, such as the Do-I-Care Agent (DICA) [Ackerman et al., 1996]. The crawler is based on the freely available Java implementation of a Web crawler called SPHINX, developed at CMU [Miller and Bharat, 1998]. The SPHINX toolkit and included Crawler Workbench enable site-specific customization to fine-tune the crawler to specific nature of each participating site.
Community modeling

Community modeling in the SilverWire is achieved as the combination of the functionality of the implicit community profiler and the explicit community profiler. The implicit community profiler analyzes the pages that have been stored by the Web crawler and builds/updates a term vector that is used to describe the interests of the participating sites.

As with most information retrieval and filtering systems, the attributes of Web pages are derived from key words automatically extracted from the document’s text. A simple parser compiles the list of key words and removes stop-words. This list is stored as the feature vector of the document. The current parser has not yet been integrated with a stemmer, but this should be added into a future version of the SilverWire. In addition, the list of linked addresses for each page is stored in the document attributes. The overall implicit site profile is the collection of these page feature values. The link information is used to assign individual weights to different pages. For example, the features of the pages directly accessible from the front page are weighted more than other pages.

Community members also provide profile information explicitly to the SilverWire database in a Web questionnaire. The full questionnaire used in collecting community profiles in SilverWire with the answers provided by the Silver Stringers group is available in Appendix II. The questions address the following aspects of the community activity:

- **Background information:** overall description, size of the group, age of the members, geographic location, Web site URL, email address, and other contact information.
- **Purpose:** What are the goals of the publishing community? What is the main target audience? Why do people want to be involved and to participate?
- **Identity:** Who are we? Who are we not? How do we relate to others? What are we interested in? What is it like to be in the group? What kind of shared history do the community members have? What are well known landmarks in the community? What are the most frequently asked questions about the community?
- **Communication:** How do the community members discuss and debate? How often do the members meet? How do they communicate? What are most important topics and issues of discussion? How do the members meet? What media do they use? How are conflicts dealt with?

The community profile questionnaire is accessible as a Web form, which is part of a more comprehensive community profile maintenance tool. This tool allows community members to make changes and corrections both to their implicit and explicit profile.

Story recommendation engine

One of the functions of the SilverWire is to find recommend stories from the SilverWire story database. Typically this relates to finding other similar stories that relate to the story just being read, created, or edited. The story recommendation is done using the standard text retrieval techniques based on the Term Frequency/inverse Document Frequency method (TF/IDF), which represents text in terms of vectors [Salton, 1975].
Community comparison

The SilverWire estimates the similarity between community profiles in order to recommend communities (and the content that their members have created) to other communities. Recommendation systems using collaborative information filtering techniques group users automatically into neighborhoods based on similarities between user profiles and use these neighborhoods to recommend new items to similar users, or to recommend users to each other [Shardanand and Maes, 1995; Orwant, 1996; Resnick and Varian, 1999]. A similar approach is used in SilverWire, but instead of clustering individual users the system clusters communities according to their similarity.

The feature vector for a community is a combination of the implicit community profile and a key word vector constructed based on answers to questions regarding their background, purpose, identity, and communication. The similarity metric between community profiles is a simple combination of these dimensions. In a future version of the system, a more complex feature comparison and similarity estimation mechanism should be used (for example based on Savant by Bradley Rhodes [2000]).

The SilverWire uses an unsupervised clustering algorithm called ISODATA [Therrien, 1989] to group participating communities, and to adaptively estimate the similarity between communities. ISODATA requires an approximate number of clusters $N_o$, a maximum cluster size $T$, a maximum variance $\sigma_n$ (for deciding when to split a cluster), a maximum distance $D_n$, and a maximum number of clusters $N_{max}$ (for deciding when to merge clusters). Here is a brief overview of the clustering algorithm:

For $i$ starting at 1 and $N$ starting at $N_o$,


2. If the clusters have not changed since the last iteration, exit.

3. If $N \leq N_o/2$, or $N < 2N_o$ and $i$ is odd, then:

   Split any clusters whose communities form sufficiently disjoint groups and increase $N$ accordingly. If any clusters have been split, go to step 5.

4. Merge any pair of clusters whose communities are sufficiently close and decrease $N$ accordingly.

5. Increment $i$ and return to step 1.

The community clustering process is computationally expensive, and it is run as a background process once every hour. The results of clustering are stored in the community model database.

SilverWire user interfaces

The potential users of SilverWire are both the contributors of content on the community sites, as well as their readers. In the case of a community contributor, the SilverWire authenticates the current user in the context of a publishing system, such as Goofy. When a user is logged on and accesses a page on the SilverWire, the community context of the logged Goofy user can be compared against the community context of the author of the story.
appearing on the SilverWire. If a non-authenticated user reads a story on the SilverWire, only the community context of the story author is known by the system.

![Image of SilverWire news ticker](image.jpg)

Figure 20. Community news ticker showing the stories in the order of appearance.

The SilverWire can be accessed as a newswire ticker (Figure 20), which shows a list of stories on the SilverWire as they appear on participating Web sites. The story list is sorted by default in reverse chronological order, but can also be sorted by other criteria, such as the contributing community. In the case of an authenticated user there are two additional possible criteria for sorting the stories: calculated community-specific story interest value, and the relevance related to the last edited story by the authenticated user. This second option is similar to the Remembrance Agent as the system searches for related stories on the SilverWire based on latest user actions (Figure 21). Currently the story recommendation engine needs to be activated manually after the story has been saved into the Goofy database. In a future version of the system this search should take place dynamically in a similar fashion to the Remembrance Agent. The newswire ticker interface also includes a simple search tool for string-based article searches.
Figure 21. Community news ticker showing the stories related to the story last edited in Goofy.

One of the goals of the SilverWire is to be able to show the community context in which the story was created. When the SilverWire user accesses the story they get a screen as shown in Figure 22. The story is shown in the left-hand column of the interface, and the community profile (background, interests, purpose, identity, and communication) are shown on the right-hand column. The user can also select the community comparison screen, if authenticated as a member of some community (Figure 23).
One promising direction for the future development of the SilverWire is to integrate the system with other sources of material, for example using a system called the ZWrap. It is targeted at developing a rich structure of a corpus of...
news [Gruhl and Bender, 2000]. The system consists of a collection of automated experts that analyze the stories in the database, looking at both the text of the stories and the annotations placed by other experts.

One of the initial ideas of the project was to use the ZWrap system to augment the stories appearing in the SilverWire using related stories in traditional newswire services. However, at the time of this writing the integration with ZWrap had not been implemented.
5 Evaluation of the Silver Stringers activity

Instead of evaluating the usability and the impact of individual enabling tools, I evaluated the project based on the activity of the original Silver Stringers group. The fact that the Silver Stringers project exists in a real world context and has been running for four years has given us a perspective that is rare in laboratory research projects. It is also useful to look at the community activity over this whole period, because it often takes time for lasting changes to develop and reach maturity in a community setting.

Method

In this longitudinal study of the activity of Silver Stringers I have used four sources: the contents of the Web site, written documents about the project, interviews with the members, and two anonymous written questionnaires from the individual members.

I have analyzed the contents of The Melrose Mirror mostly regarding the volume of material and changes in topic areas of the articles. In addition I have analyzed a record of all the notes and minutes from the regular meetings between August 1996 and July 2000 kept by the members of the Silver Stringers group and Jack Driscoll (editor-in-residence in the MIT Media Lab’s electronic publishing group). Additional written sources were newspaper, magazine, and book articles about this project as well as email exchanges conducted by and with the Silver Stringers between 1996-2000.

I conducted a group interview which was specifically geared towards questions on the difference between community identity and individual identity in December 1999 to uncover more about the role of identity and self-exploration in the process of community publishing. This analysis also benefits from the results of a series of interviews conducted in October 1999 by researcher Maarit Mäkinen from the Locality in the Global Net project at the University of Tampere [Mäkinen, 1999].

We questioned the members in two consecutive queries. The first short query was answered by 16 members in one of the weekly meetings in May 2000. After receiving the results, another longer query was given as a home exercise for the members in the following Wednesday meeting. Ten members responded to the second query.

Analysis and statistics about the activity

In August 1996 a start-up core of 10 members had increased to 14 members and produced 28 submissions for the first edition of The Melrose Mirror. After almost four years of publishing (August 1996–May 2000), the Silver Stringers have produced 756 articles and 889 photographs. The publishing dates of the stories were available only for the period that the group has been using Pluto (since April 1998). During this period, the amount of published material per month has been growing. Especially, the group has started using image files (mainly photographs) extensively in their storytelling (Figure 24).
The group has a weekly meeting on Wednesday afternoons. In these meetings they debate the contents of their Web site, tell stories about their personal experiences and memories, discuss the events in the local community, and share the experiences and difficulties they have had with the publishing tools, the Internet, and their home computers. These meetings are also a place for learning new skills in journalism, writing, editing, photography, art, and computing. Members also discuss many policy issues about how their electronic publication is managed and designed. For example, they often debate the structure and layout of the front page of The Melrose Mirror, with issues regarding the size and placement of pictures, the amount of featured stories, and the presentation of links to other sections of the site. A characteristic feature of these weekly meetings is their humorous tone. People come to enjoy the relaxed atmosphere and casual talk, but also to get "serious business" done.

Figure 25 shows the attendance of the Silver Stringers in 134 weekly meetings (January 1997–June 2000). The original group of 14 members has been growing slowly as can be seen in the attendance chart. After four years of activity 12 of the original “charter members” are still active in the group. Overall there are 30 members who have attended a Wednesday meeting more than three times, 12 members have attended more than half of the meetings, and one member has attended every meeting. In addition to these 30 members, there have been roughly 20 guests who have come to meetings, but not decided to continue. The chart shows that some members have joined and become regulars (#15, #16, #20, and #21), some members attend the meetings only occasionally (#8 and #22), and only two members have quit the activity (#18 and #19). Today’s membership also includes two former Melrosians living in Florida and California who participate remotely.

In addition to the large group meeting that typically attracts 15 attendants, there are one to three smaller gatherings per week as the members go to the center to further debate the stories, to work in smaller groups, and to practice their skills. An editorial committee of five members meets at least once a week to plan for the next issue to be published, to edit and comment on member contributions (text articles, photographs, art, music, etc.), and to publish them on the site.
Figure 25. Attendance chart of the Silver Stringers and page views on The Melrose Mirror.

The group hasn’t done very much active recruiting, so new members have come mostly through personal connections with group members. Since retired people typically belong to several groups, people have learned about the existence of the Silver Stringers through membership in another community or association. The press articles about the project have also made people in the local community of Melrose more aware of the Silver Stringers. The group is always welcoming new members and has often discussed doing more active recruiting.

Figure 25 also shows the amount of monthly page views on The Melrose Mirror site (all page views and page views from domains outside the MIT Media Lab). There have been periodic peaks in the number of monthly accesses — typically after the project has been mentioned in the press — but otherwise the readership has been quite steady averaging in about 4000 page views per month. Overall The Melrose Mirror has been accessed from 23,813 distinct Internet hosts.
The increase in computing-related skills has resulted in the members using computers regularly as their daily routine and mostly for Internet related usage. Two of the original members had computers at home when the project started in 1996. In the summer of 2000, 23 members have computers at home, which is about 70% of all contributing members. Based on the questionnaire, the project has been one of the most important reasons for members to buy a home computer. Interestingly, many of the newest members joined the group after they had started using home computers and had discovered the Internet. From a single digital camera donated by the MIT Media Lab in 1996, the group now has five members with digital cameras of their own. The melrose@media.mit.edu mailing list currently has addresses for 14 members who have email accounts and regularly go online.

Community identity

The members originally started in the project because they are all senior citizens and live in (or near) the geographic community of the City of Melrose. Through their participation in the project they have become a tight-knit community on their own. All groups have their own identity. What is the identity of this group and how is that identity reflected in their publishing practices and in The Melrose Mirror?

Their own perspective on old age

It is not a surprise that the two main characteristics that the members share – their hometown and their age – are both strong components in building the identity of the Silver Stringers. Their age comes up all the time in their discussion, their jokes, and their stories. A good example of their sense of humor is Natalie Thomson’s “Jump Rope Chant For Elders” (Appendix III).

Another aspect on seniority is that they have a wealth of experiences that they would like to share. According to the theory of generativity, they may even think of passing on that experience as their duty [McAdams & de St. Aubin, 1998]. For example, The Melrose Mirror contains an entire section containing 14 stories of personal recollections and memories related to The Great Depression of the 30’s.

Local identity

The members of the Silver Stringers feel that they can provide a valuable addition to the available palette of sources of local information in their community. More importantly, the activity has made them feel more connected to their home community of Melrose, as replied by 70% of the respondents.

This increased involvement can also be seen in their stories and connections within the larger community of Melrose. For example, they have taken an active role as community historians as many stories involve events and people from the Melrose of the past. To preserve the stories, the Silver Stringers produce a paper copy for the local library. Also, they have been active in getting intergenerational activity going with the third grade at the local Beebe
School. The Silver Stringers have been enthusiastic about this prospect, and so have the pupils and their teacher, but this activity has not reached its full potential yet mostly because of administrative reasons at the school.

However, it should be noted that debate about larger community issues of Melrose, which is often politically charged, has not really made its way onto the site.

*We want to steer away from community conflicts. We don’t want to get deeply involved. These become quickly political. Why should we? [anonymous stringer]*

So far, the Silver Stringers have not been that interested in challenging the larger community. Controversial issues are mostly brought up in the internal discussions among members when brainstorming for story ideas and when editing and reviewing story submissions. However, this (sometimes heated) discussion stays internal to the group.

Although the Silver Stringers are not deliberately painting a too-rosy picture of their community, they do often characterize the site as the “happy news site” about the Melrose community. Typically they want to share with their audience why they enjoy living in Melrose. They have reported major local events, such as the Melrose Victorian Fair, which is taking place every year. Another example is their collaboratively produced virtual walking tour of Melrose entitled “City of Homes”.

**Style of working**

The MIT participants made it clear in the beginning of the project that, excluding issues regarding the technology, they are not going to tell the Silver Stringers what to do and how to run the site. That was left as an exercise to be figured out by the community members themselves. This open assignment created some confusion in the beginning.

*People didn’t really know what the purpose was. Some just wanted to tell their story and weren’t interested in the community aspect; others came to learn how to use a computer. We were supposed to find our own ways of working, and nobody was really in charge of deciding for others what they should do. There were no assignments. There were no rules. It was just too new to some people, and that’s why they left. [Don Norris]*

However, over time the community has developed a working style that seems to best fit their needs. The role of physical meetings is very important. Ideas are shared and events are discussed as people get together to socialize and just to have good time. This was well expressed by one of the members:

*We do this for fun. Everyday is Friday in this group. Meetings often drift away from formality. We don’t want to get any stress from it. Maybe this style of working doesn’t fit everyone. But we are at the “cutting edge,” and there is no precedent for this. [Don Norris]*

The Silver Stringers group decided early on that there would be no one person officially in charge and decisions would be made by “committee.” Obviously the group could be more “efficient” in its decision-making if it so wished. However, it is considered important that everyone has his or her say in the meetings and that decisions are not rushed.
The Silver Stringers clearly like to socialize and to discuss things within the framework of an organized meeting. Regular face-to-face meetings have tightened the links among the members, and the members look forward to Wednesdays as one of the highlights of the week. Every formal meeting has a chairperson, which is a rotating shift. This also has provided all members a sense of shared responsibility and continuity as each one takes the center stage for two weeks at a time. There is also a synergy between the exchanges that people have over email and their mailing list.

At the outset, the Silver Stringers consider themselves as a leaderless group. In a community setting almost always some members take more initiative, bear more responsibility, and accumulate useful information for other members. Even if there is no official leader in the Silver Stringers group, several people considered that they actually do have a leader, and that the group has benefited from this “de facto” leadership.

From the beginning we have had one person who kept the program moving in three directions: computer knowledge and using the publishing software; including photos in the stories; and generating story ideas among the group. [anonymous stringer]

Social learning
An important aspect in community building is the mentoring and learning that happens between the members as the members are teaching each other. In the Silver Stringers group there is a true atmosphere of social constructionism, which has evolved from the process.

My experience is that group setting — either face to face or in a virtual environment — is an ideal atmosphere for the development of undiscovered writers. The novice shapes ideas rapidly in dialogue with others and often gets the kind of feedback that promotes learning [Driscoll, 1999].

Members feel pride in each other’s achievements as shown in the following email exchange:

On progress, you may be interested in the fact that Jini took it upon herself, when the project was about to fall flat, to do a story on St. Mary’s renovations, and do a pictorial layout complete with codes and captions. She did it entirely on her own, and her work only required a few minor adjustments. I was so very pleased. [Don Norris]

Most of the mentoring happens at the senior center’s computer room. More recently, the members have also started making “house calls” if another member had problems with his or her computer or with publishing-related tasks. This is the same pattern as was seen in the MUSIC project [Shaw, 1995].

However, it is not always easy to come up with ways to keep that newly-acquired knowledge. People teach each other the same things many times, as one member notes:

Our problem is that we can’t remember a damn thing! The knowledge isn’t passed on efficiently. We lose a lot on the way, and sometimes it’s a struggle. [anonymous stringer]
Some other communities we have been involved with have taken a completely different approach of writing down a manual of detailed work procedures to the members. However, this approach might not fit the casual style of the Silver Stringers.

If the project would be repeated in a larger community, for example amongst all adults in Melrose, it probably would not be as successful. The sharing of responsibilities, togetherness, and motivation in a more heterogeneous environment would be more problematic.

_Doing together_

Socially the project affords individuals many opportunities for collaboration with other members of the group. They feel that it is important to be able to combine multiple skills and capacities in different projects. This brings out talents in the members: photographers, writers, cartoonists, composers, or those who are more inclined to master the technology. On the other hand, some members have discovered new talents in themselves. They have created together major sections of the site as subprojects: Great Depression, World War II, and City of Homes – Victorian houses of Melrose.

_It’s always great to see what others have done. The whole is much larger than individual parts. [anonymous stringer]_

Through group work and jointly created artifacts on their Web sites the community identity is developed and strengthened. The Silver Stringers are proud of their product, and the feeling is combined with individual pride:

_We are proud of it. But it’s both community pride (we did this) and personal pride. For me, relatives have been a big boost. All my cousins have printed copies of my work, and they have connected back to me._

[Virginia Hanley]

_Conflicts grow the sense of unity_

The group often grows mentally after hard times, and community identity is strengthened after resolution of internal conflicts. One sign of a healthy, conscious community is the willingness to acknowledge and work with conflict. Conflicts also open people up to raise issues that are important to resolve, instead of driving the unexpressed issues underground [Shaffer & Anundsen, 1993].

It is clear that the Silver Stringers have had their share of conflicts and heated debates. Although the group is not very organized or structured, there have been some conflicts where individual members wanted to steer a group to a direction that the other members did not want to take.

An especially controversial issue has been whether everyone in the group should have a similar set of technical skills for using the computers and working on the electronic publication. Over time there has developed a culture in the group that everybody does not have to learn to do everything. For example, there are members who have never
written their stories on a computer. They might not yet have even used a computer. Still they are considered as valuable contributors.

Sometimes there have been deliberate attempts to change this culture of participation at many different skill levels and with different skill sets. So far the group has decided otherwise. They do not want to put pressure on any individual by establishing “member requirements” on who is allowed to participate and who is not based on what level of computer literacy they have achieved.

Another source of conflict has been the inefficiency of the group in its decision-making process. The continuity between meetings is often lacking, and people feel that they are discussing the same things over and over again. This is reflected in the following excerpt from the meeting minutes:

[Anonymous stringer], a relative newcomer, presented a memo to the group calling for a more formalized, more organized association. It would provide for a President, charter, bylaws (constitution) and a provision to follow Roberts Rules in the meetings. The proposal was tabled until Aug. 16, but got some support from [another stringer] who expressed frustration over the lack of a “continuity officer”, someone who would remember the group’s policies and other decisions it had come to in the past. He said he thought a lot of big projects fall by the wayside, such as developing a relationship with the Camera Club and linking with other local websites. He also said the group needed a way to develop expansion. [Jack Driscoll]

Active role of the MIT Media Lab

The role of MIT Media Lab is to give technical support and to act as guides in the skills of editing, journalism, and electronic publishing. MIT researchers and mentors have participated in every second weekly meeting. For the Silver Stringers the regular contact with MIT researchers and staff has been a learning opportunity and also has provided a sense of being connected to an “active society” and the current technological research.

Facilitation by the MIT Media Lab has had some unintentional and unexpected consequences. It has not only given them a boost, but it’s also becoming a source of pressure. Now the Silver Stringers would like to live up to the expectations.

_MIT made a tremendous difference for the whole project in terms of support, advice, encouragement – and they set the standards higher._ [anonymous stringer]

There has always been discussion among the members on how long the project is going to last. The Silver Stringers are concerned that someday the MIT Media Lab will stop the support, and they will be left to their own devices. It has been important to provide assurance of continuity to the group members.

The Silver Stringers project has had continuous backing from the MIT Media Lab, a large amount of publicity and high recognition inside the community. If the project had a lower profile it might have not gotten this far. When comparing The Melrose Mirror to the Satter-lights site (first two senior groups), the number of stories and the time
spent in the publishing activity is much smaller in Revere than in Melrose. This is partly due to the fact that the
group has had less influence from outside in the form of mentoring and recognition. More importantly, the activity
in Revere has not really extended outside the editorial committee of three people, and there has not formed a similar
community for idea exchange, debate, and social learning as in Melrose.

Visibility of the project

The faculty at the MIT Media Lab has often mentioned the Silver Stringers as a possible role model for other
communities. In a way the Silver Stringers have been raised onto a pedestal. How do the members see it?

Outside recognition is exciting, but that's not why we are doing this. Building connections is very important
and the stories that have appeared in the press have helped a lot. [Natalie Thomson]

The group has received many interview requests from traditional media (Boston Globe, New York Times, etc.). An
Associated Press newswire story has been published in at least twenty newspapers. Members questioned by the
media crystallize the positive energy of the group. These interviews and press stories have also strengthened the
links among the members and with the social environment that surrounds them.

A question that is often posed is that now that they do have this channel and that they do have this voice, is anybody
listening? This question is partly answered by the Web site page views (Figure 25) and by the feedback email
letters that they have received. It is clear that the Silver Stringers want to connect to an audience. Every connection
they make to their readership is greeted with satisfaction and enthusiasm. The best contacts they have made have
often been with people who are ex-residents of the local community or have some other ties to Melrose that have
been revitalized by the site. All in all, however, telling their stories seems to be a higher priority than having a
strong feedback for their content. They have also started to write a regular email letter every month about the
current month's issue to a mailing list of about 200 potential readers. This initiative came from the group members
and they largely implemented it by themselves.

Individual impact of the project

Desire to learn new skills

According to the questionnaire, the Silver Stringers value highest the fact that they can learn new skills in the
project. The group also continues to have time and energy to try new things. Many have commented that the
activity is a continuous mental stimulation and that they find it very satisfying:

It's addictive. It's a challenge. [anonymous stringer]

My husband couldn't understand why I didn't go to bed until 1:00am. He didn't understand. I was up
writing. [anonymous stringer]

You have given us a toy (Pluto) and it's fun to play with it. [anonymous stringer]
After members have bought home computers, they have typically become more productive in writing stories, as shown in this email note about one of the original group members:

And Kay finally bought a computer and has admitted that she has become hooked, spending far too much time on it. Her productivity has gone up immeasurably in the past four months – the time she has had a computer in the house. For the record, that is four major stories in four issues. [anonymous stringer]

Reduced social isolation

The members benefit from being able to share experiences and fragments of life among themselves and with their readers.

It really changed my life. Now I come here and I've met all these wonderful people. It really increased my social circle. [Ella Letterie, quoted in Karagianis, 2000]

Also the fact that members use the computers and the Internet at the center and at home has made them feel more connected to the world.

It was so easy to stay home. I used to go to the library, check out five books and stay home and read. Now I don’t have time for that. Going online changed my life. Now I'm much more interested in everything. I feel livelier. I get up in the morning and think of all these things I can try on the computer. And it has made me more connected with other people. [Virginia Hanley, quoted in Karagianis, 2000]

Email has also been an important source of motivation for buying computers for home use. Many members have children, grandchildren, and relatives with whom they can now communicate through email.

Six respondents out of ten replied that they feel closer to their home community because they participate in the project. Moreover, letters and feedback they receive from all over the globe have made them feel more connected.

There is more context that pertains to my world, my community. We are finding more connections around the country, around the world, with whom we have much in common. [anonymous stringer]

Self-exploration and personal growth

The project has provided opportunities for the Silver Stringers to use narrative and images to explore meaning in their own lives and how their personal histories relate to the shared history of their community. There are many examples on the Web site of how people have started to use the Melrose Mirror in reflecting about their own lives.

It's clear that being part of this community has made the members do more self-analysis. [anonymous stringer]

People have more and more connected their personal stories to other members of the community, and there are a lot of connections between personal experiences that people find valuable to share.
We discuss more among the group members about the topics of interest, and members in general have grown to be much more interested in the community where we live. [anonymous stringer]

Stringers have their own personal pages with a picture, short bio and links to stories that they have written:

The personal page with its links to the stories gradually becomes a portrait of that person. The collection of their stories reveals their interests. [anonymous stringer]

Personal growth is another enduring result of the Silver Stringers project. Some members have discovered new talents in themselves. Bill Jodrey began writing stories about the days of “riding the rails” as a hobo in his youth during the Great Depression. He had never been a professional writer and actually had never thought of himself as a writer at all. Yet once he began writing down his stories it became clear that he was an untapped talent. He’s now preparing his “Tales of the Open Road” series to appear in a book.

Figure 26. Personal page of Bill Jodrey.

He has also used the Wednesday meetings as a venue to tell these stories to other Silver Stringers, as shown in this excerpt from meeting notes:

In the beginning of the meeting, as is customary, each Stringer is called on to report on anything he or she wishes. Bill Jodrey always passes, but on this day he said, “This is one of those rare days when I don’t have anything to say.” Everyone got quite a kick out of that, but little did they know that at the end of the
meeting Bill would regale them with story after story for almost 45 minutes about his days as a hobo (his finished book was sent to an agent last week). They couldn’t get enough of his storytelling and asked question after question. His stories were spell-binding, humorous and sometimes brought tears to the listeners [Jack Driscoll].

Others have discovered talents and interests in writing, photography, historical research, and even Java programming.

Figure 27. Personal Page of Virginia Hanley.

My personal favorite of self-exploration is the collection of “3.A.M thoughts... Questions and thoughts that rise to the surface of your brain in the dark hours of the night” by Virginia Hanley, which include gems like the following:

One of the first signs of aging is forgetting why you have gone into a room. You stand there thinking “Why did I come in here? What was it I wanted?” It becomes especially disturbing when you realize that you are standing in the bathroom. [Virginia Hanley]

Attitude towards traditional media

The questionnaire reveals that the Melrose Mirror has changed the attitudes of the Silver Stringers into being more active and critical towards the established media. Half of the respondents to the questionnaire said that they are more likely now to send a letter to the editor of The Boston Globe than when they started participating in the group.

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They have also discussed co-operation with the local newspaper *The Melrose Free Press* and the local television channel MMTV, but real co-operation has not yet started. This has not been the fault of the Stringers and this co-operation is still a part of their future plans.

**Jim Driscoll:** We’re going to have the editor come here and we’re going to demonstrate the *Melrose Mirror* and also have some selected articles that they might consider publishing this summer.

**Marie Moreland:** If they don’t do a good job we’ll take over *The Melrose Free Press*!

**Everyone:** <laughter>

**Summary**

There are multiple reasons why the Silver Stringers wish to belong to the group. The Silver Stringers’ strengths are in a high motivation to learn, the importance of socialization, and the opportunity to spend time and effort on the project. The common goal to publish the *Melrose Mirror* clearly increases the sense of community and belonging. Many people enjoy the opportunity to learn new things and the constant mental stimulation of the activity.

Community publishing activity stimulates interaction among the participants and encourages the members to tell and share stories. This framework also provides a friendly and safe environment for members to learn to use computers and to relate to new technologies their grandchildren are using. Since the focus of activity is not in the use of computers as such, it feels less intimidating for the non-experienced members. For some members the technology is still a hurdle, or they are simply not interested in mastering computers, but nobody is forced to learn to use the tools. Group setting allows multiple roles where the members start using the computers when they feel ready to do so themselves.

There is a strong sense of cultivation, personal development, and social constructionism as the Silver Stringers teach each other and the members of other communities. They usually write stories that are based on the wealth of their personal experiences, but relate to the larger community. The identity of the Silver Stringers and the identities of individual members are thus reflected on the site through the collections of stories and artwork they have created. Some members have also started to use the site as a tool for explicit self-exploration.

The collaborative activity has evolved into a meaningful and fulfilling part of the everyday life of Silver Stringers, enabling them to be active in the local community and to connect with the rest of the world. This has happened through participation at multiple levels. Individuals are more socially active and knowledgeable after learning new skills regarding self-expression, group work and new technologies. The members are better integrated among each other as they share interests, passions, and goals regarding their jointly created Web site. At the community level they feel more connected as people are more informed on local issues and as they increasingly get recognition from other members of the larger local community of Melrose (“*oh you’re part of the Silver Stringers group*”).
6 Conclusions

The Silver Stringers and Junior Journalist demonstrate how electronic community publishing can result in a meaningful and entertaining addition to traditional publishing. The community publishers have members with stories to tell, and they like to gain new skills in telling those stories. Active, participating, and creative individuals and communities are using this opportunity to explore shared history through narrative, photography, audio, video, and other forms of artistic expression. Over time, not only are the individuals learning new skills and discovering new ways in which they can participate in the activity, but also the community as a whole is learning and evolving:

*The traditional methods of measuring individual competence are not suited for understanding community development. Our journalists are not isolated individuals; they have created rich cultures and their growth is a result of participation within a social context of media production. More so, when individuals participate in shared activity, they are not only developing new ideas for themselves, the collaborative process is transforming and shaping the organization of the community as a whole [Smith et al., 2000].*

This phenomenon is challenging the professional journalists to find new ways to make relationships between media producers and active communities. It is increasingly common for commercial news organizations or Web portals to provide “community billboards” or “community sections” on their sites. These can be targeted to real communities, such as local community groups, or virtual groups who only discuss on the Web. These site additions can become a valuable resource for the service provider. For example, newspapers get story ideas and may publish stories that have been posted to the community-created Web site [Toner, 1999]. However, the service provider should not make all the decisions regarding site structure, design, and publishing process on behalf of the community. If they do, they run a risk that the community sections become professional looking but uninspired collections of pages with no real owner, or anyone who would truly care for the activity. Sense of ownership is crucial to continuity, and it should be clear to the community members that they are in charge.

Community publishers devote their time and energy to produce valuable content on the Internet. These electronic publications often remain isolated pockets of content, as the existing tools for indexing, searching, and integrating Web content are not aimed towards interlinking community activities. SilverWire is designed to build bridges across community boundaries by comparing the works of community publishers and by introducing members of different communities to each other. The system uses community modeling along the dimensions of purpose, identity and communication in maintaining profiles of community publishers. The implicit goal of the SilverWire system not only makes a shared resource pool of community-created stories but also encourages personal interactions between the story authors and creators of the Web sites across community boundaries.

SilverWire can provide a way for conventional media companies to better serve these emerging community publications by integrating professionally-created information feeds with community publications. Increasingly, the role of media companies in a networked society is to track and understand community needs and to help communities with their information needs and to act as a mediator between communities. With the Web, the
amount of available information content is growing extremely rapidly. As any content becomes accessible through a hyperlink or a search engine, the volume of information can become overwhelming. In the world of abundance of easily accessible information, the need for orientation and guidance becomes more apparent. In the future the professional journalists may take the role of moderators of horizontal communication among the audience. The professional media producers can facilitate this by supporting this exchange of content and ideas in providing comparisons and matchmaking between different communities.

This thesis also concerns the role of the seniors in a networked society. With the aging of the population in the western world, the age distribution of users of technological products will change drastically during the next twenty years. The general attitude towards aging is also changing. Senior citizens expect to continue to be active; to have a fun “third age,” which is more energized, and more connected than before [Laslett, 1991]. Already senior citizens are one of the fastest growing demographic groups to buy home computers and to become Internet users. However, it is crucial that the available technology is useable and meaningful in the context of the everyday life of the senior citizens [Fozard, 1997]. The results of the Silver Stringers project indicate that mental stimulation, learning new skills in journalism and computing, and participation in community activity have provided an important addition to the life of the group members.

We have observed that networking by computer complements and even encourages face-to-face communication. Both the Silver Stringers project and the SilverWire project are aimed at finding ways for Internet technology to create, support and reinforce social networks, and to enrich the life of the participants who choose to become active content producers.
References

Abramson, N.S. (1992) *The Dtype library or, how to write a server in less than it takes to read this manual*, MIT Media Laboratory, Electronic Publishing Group, Cambridge, MA.


Appendix I: Silver Stringers individual questionnaire

(Part I)

Gender:
Male = 9  
Female = 7

Age:
60-69 years = 1  
70-79 years = 10  
80+ years = 6

Years as a Stringer:
1 year = 4  
2 years = 2  
3 years = 1  
4 years = 9

Did you have previous writing experience?
Elderhostel (6-7 years)
I worked in the Patent Department at Raytheon Company for 32 years and frequently read patent applications and would make non-technical suggestions.

Not professionally.
Yes, a career in newspapers and magazines.
No (x7).

Five years of poetry and autobiography, short stories.
Amateur experience (writing occasionally for a company paper).
I have written many letters to the editor. In one of my jobs, I was required to answer questions and complaints from the customers.

Not creative writing. Writings were research papers – marketing plans – grant writing.

English writing major.

Did you have previous computing experience?
Have been retired 11 years. Had some computer experience before I retired and upon retiring bought an IBM PS1, but I gave that to my children.
About 6 months on a very early model.
Yes, bought a Apple lic in 1982 and used it to produce millions (!) on the stock market – actually hundreds of thousands... On line with Dow Jones.
No (x5).

Only word processing as a secretary.
About 10 years but only used it as a typewriter.
I had experience with Xerox word processing equipment (about 8 years) so I could edit and compose on the screen.
Yes, 3 years (financial & Web).
Yes, got a new computer as a gift in 1999.
Yes – started about 1985 with Apple IIE. Used mostly for fundraising lists – letters – record keeping.

Yes, 10 years.

Last years 1999, mostly email.

**What role(s) have you played as a Stringer?**

Group production for Xmas.

Pictures and stories of my backyard wild life animals and rock walls scenery.

Listening, learning.

Listener, writer, editor, proof-reader, artist/illustrator.

Founder, editor, writer, photographer, choreographer (!), chair.

Writer (x2).

Contributor.

Writer (least enjoyed), secretary, editor (most enjoyed).

Writer, poet, caterer’s helper, some day I’d like to learn to do editing.

I started writing articles when I first joined the Silver Stringers & have been an editor & now periodic publisher for several years. I have least enjoyed refereeing the quarrels that arise between divergent personalities in the group.

Writer, editor, publisher.

Wrote story of myself.

Attending meetings, recording printed articles, keeping bank pass book for misc. get together.

Have done some articles, both personal histories, people interviews, served as editor past two years, main interest in finding ways and means to increase readership.

Editor, writer, member.

**Has your role changed since you started and, if so, how?**

More deeply involved in editing than I care to (it’s probably been good for me).

Should write more.

Looking towards the future with a hope of finding new ideas.

No (x7).

Yes. After I listened, I decided to participate in various ways.

Yes, others have learned and assumed many of those responsibilities.

More involved in editing.

I started as a very passive member & have grown into a vocal, active, and hopefully constructive critic of the Mirror.

Started as a writer and elevated to editor.

Some, not as active as before.

**Are you having fun?**

Is old age fun?? Enjoy camaraderie.

Yes (x10).

Yes, it is great to fill in my free time after housekeeping (as a widower), gardening, golf, and family activities with my six sons, nine grandchildren.

A ball! A goal. A project with results. A product that has been recognized world-wide. Freebies at MIT! A marvelous association with the Media Lab and its sponsors.

Yes/no. I don’t enjoy the research.

Sometimes.
For the most part, YES! There are always problems that arrive but we deal with them more than adequately.

How important is the social activity related to being a Stringer?
Highly important. I find it very difficult to dispense assignments to retired persons – guile and persuasion are necessary – as part of the social scene.

Much, as it blends into the production, individually & group association.

Learning more about friends as we exchange ideas.

Enjoy the program.

Very important (x4).

Quite.

10 – on the scale.

I look forward with great anticipation to every meeting of the Silver Stringers. I have made many good friends here.

Mixing in with our fellow Stringers.

Yes – the opportunity to meet with others with same interests.

Very important. Actually spending three days (about 10 hours) per week on the Mirror. Great camaraderie and enthusiasm. Many of the group have had a rebirth as a result of the experience.

Very little.

How is conflict dealt with?
The members who have slow burns take off and return at the next meeting simmered down.

Since I start most of the fights, I can honestly say that we deal very well with conflicts. We talk things out and eventually come to an agreement. We put things to a vote after hearing all sides and abide by the majority.

Peacefully.

Adequately.

We manage to cope, but conflict is minimal.

These are reasonable people, and therefore conflict is settled amicably. There was one member who brought dissention, but the matter was resolved.

Pretty well.

Jovially.

There have been some heated moments, but we seem to have resolved them.

Very well (x2).

I handle it pretty well.

Smoothly.

Basically very well/ Good humor prevails in most cases. Objective is to keep everyone in group – takes some patience.

OK.

What is your concept of journalism and has it changed?

At the local level (Melrose Free Press), I wonder what ever happened to grammar, page layout, punctuation, etc.

Explanation of truth no matter how converted, anecdotal news is the best.

Has changed!

Yes, the rules by which I wrote for so many years can now be laid aside. There is more first person, more essay-style writing. Journalism gives more details to the news. I now know I wouldn’t make a good reporter, just a storyteller.

Not sure.

Writing articles now! Reading them more carefully for content and readability.
It's something that both the writer AND reader should enjoy.

I am much more aware of the problems that arise in publishing a paper. It gives me a great deal of satisfaction when we solve our problems.

Concept of journalism is to write what is happening in the world.

Definitely have greater respect for journalists. Also realize how tricky it is to publish daily.

Do you read the newspaper or watch television news differently?

I am cynical regarding the news... But that has more to do with aging, of viewing the world from a slightly more distant place.

TV news only interprets.

Yes (x3).

No (x6).

Since my computer use, both have suffered time wise.

Yes – I dislike them now. I feel as though the news is being manipulated.

I think I pay more attention to the presentation of different stories.

Yes, I have become more aware of news and also more critical of writers and newscasters.

Read newspaper differently, intrigued by front page articles.

Have you ever written a “letter to the editor”? Would you be more likely to, since becoming a Stringer?

I see many errors in printed material, but people don’t like to be corrected.

In the course of our social and economic revolution political thought have not been yet expressed. As one ages one has attitude and thought changes that do not correlate with the norm. In other words, an activist revolutionist.

Yes, frequently – even before “stringing”.

No. I am cynical regarding the news that is published.

Yes. Yes for there is more content that pertains to my world, my community. We are finding more connections around the country, around the world, with whom we have much in common.

No. No. (x3)

No. Yes. (x5)

Yes. Yes.

I have written many letters to the editor especially to the Melrose Free Press on local problems. I think I am much too critical at times but the Free Press usually printed what I sent them. I have not written any since becoming a Stringer.

Not to the editor, but now I will write to the “Political & Social Issues”.

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Silver Stringers individual questionnaire (Part II)

Why are you participating in the Silver Stringers group (1=not important, 5=very important):

<table>
<thead>
<tr>
<th>Reason</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because it's fun</td>
<td>X</td>
<td>X</td>
<td>XX</td>
<td>XXX</td>
<td>XXX</td>
<td>4.00</td>
</tr>
<tr>
<td>I want to contribute my stories and pictures</td>
<td>XXX</td>
<td>XXX</td>
<td>XX</td>
<td></td>
<td></td>
<td>3.90</td>
</tr>
<tr>
<td>I like the feedback and recognition we are getting from people outside the group</td>
<td>XXX</td>
<td>XXXX</td>
<td>XX</td>
<td></td>
<td></td>
<td>3.10</td>
</tr>
<tr>
<td>I want to learn new skills and/or develop my existing skills</td>
<td>X</td>
<td>X</td>
<td>XX</td>
<td>XXX</td>
<td>XXX</td>
<td>4.13</td>
</tr>
<tr>
<td>I like to work together with others</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td></td>
<td></td>
<td>4.10</td>
</tr>
<tr>
<td>The group convinced me to come work with them</td>
<td>XXX</td>
<td>XX</td>
<td>XX</td>
<td></td>
<td></td>
<td>3.14</td>
</tr>
<tr>
<td>Because it is not a typical activity for senior citizens</td>
<td>XX</td>
<td>X</td>
<td>X</td>
<td>XXX</td>
<td>XX</td>
<td>3.30</td>
</tr>
<tr>
<td>I'd like to get to know others in the group better</td>
<td>X</td>
<td>XX</td>
<td>X</td>
<td>XXXX</td>
<td>X</td>
<td>3.30</td>
</tr>
<tr>
<td>I like to debate issues related to my community</td>
<td>XX</td>
<td>XXX</td>
<td>X</td>
<td>X</td>
<td>XX</td>
<td>2.78</td>
</tr>
<tr>
<td>I like to read stories from other members of the group</td>
<td>X</td>
<td>X</td>
<td>XXX</td>
<td>X</td>
<td>XXX</td>
<td>3.44</td>
</tr>
<tr>
<td>Reading the Melrose Mirror inspired me to join the group</td>
<td>XX</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>2.33</td>
</tr>
<tr>
<td>I want the community memories to be preserved</td>
<td>X</td>
<td>XXX</td>
<td>XXX</td>
<td>X</td>
<td></td>
<td>3.38</td>
</tr>
<tr>
<td>I enjoy the camaraderie and affection in the group</td>
<td>XXX</td>
<td>XXX</td>
<td>XXX</td>
<td></td>
<td></td>
<td>4.00</td>
</tr>
</tbody>
</table>

Other reasons:

I appreciate what this has meant to the group in terms of learning, enthusiasm, and accomplishments in twilight years. I realize this concept can continue to grow and extend to literally thousands of communities in the world.

Association with Media Lab and Jack Driscoll, and grad students. It is a fantastic learning opportunity.

Came to meeting at a suggestion of a friend.

They are a happy group.

What has the activity meant to you personally? What feelings do you associate with belonging to the group?

Stimulating.

Good people – I have a chance to share my reviews on the arts so important and occasionally articles on socio-
political issues

Activity has stimulated me mentally - am keeping more current with the world around me - and maintain continuous link with children, grandchildren, and local community. I realize this is a unique concept that will continue to flourish worldwide.

Pleasant – one more activity for a widower, such as myself.

It is important that we learn and succeed. The project has provided opportunity to be useful in retirement - to be useful and part of the development of a new means of communication.

In addition to social interaction with peers, it allows me to use my writing, proof reading and art skills, which would otherwise lie fallow.

It has kept me interested and has promoted a feeling of self-worth. Mostly comfortable feelings.

Correlation of ideas. A sense of teamwork. Problem solving in group cooperation.

Increased interest with the computer and the community.

Keeps me busy. I enjoy being with all the others and learning new things.

What activities or events (online or face-to-face) do you like the most/ the least?

Most:

Teamwork involved in planning and publishing monthly edition.

Talking amongst the group.

I enjoy "computing" - running a computer to some useful end. I enjoy working the editorial board and the group pas a whole.

Meetings with editors and group meetings on Wednesdays, especially the help and advice of MIT... the efforts of Marko (I think his name is).

Seeing my work published.

Discussion and problem solving of questions pertaining to computers.

Wednesday's meetings.

Face-to-face meetings

Least:

Community reporting: energy and motivation needed to attend a local event – interview, take notes and write up article.

The frailty of the machines is disappointing, although understandable.

HTML. <! - It's the pits and I have not had time to learn it --> As editor, having to critique or reject someone else's work.

Listening while two or three discuss terms over my head.

Repetitive rehash over and over again without conclusions.

Do you feel more, equally, or less connected to the local community of Melrose because of this activity? Why?

Same

Equally, I'm already quite connected by writing for the Melrose Free Press, active in my U.U. church, contact with state rep, etc.

At present, no change. In the future, however I can see that the group will - or should - expand their contacts to segments of city - city administration, schools, civic/community organizations (such as Victorian, Historian Societies, MMTV local TV channel, etc.)

More, because my writings are enthusiastically approved for publication
Closer, I suppose. We have created a new entity in the community, but the challenge now is to physically reach out to its members, to sell them on the philosophy of the project, on the importance of new means of communication. More connected – the community, increasingly is taking notice of our dedication to producing a worthwhile publication.

MORE – The editors want local stories, which gives me the courage to learn more about them.

More connected as the past focuses on the present and future. It is good Liaison.

More connected – realization of current activities.

More connected because of the conversations around the table.

**Do you read the stories that are published on your site (specify if online or in printed version)?**

*Some, printed version.*

Occasionally in print.

Yes, read most of them online.

Yes – in printed version.

Not all. Most. Online.

Both, I have a drive to make everything correct in spelling and grammar. The meter of the poetry I leave untouched after reading (Poets are touchy!).

I read about 90% of them. I read online versions and print them if I feel they’re worth saving.

We run off on the printer all written articles since last Sept. 1999.

Both.

Yes – mostly online when editing or printing when I’m copying each edition.

**What do you think of the content and quality of your Web site? How has it changed over time?**

Not sure, since so seldom see it, not having a computer. I do feel more news and discussion of serious social problems would be good.

For both content and quality, I don’t think the Mirror has changed much. We usually have 3 or 4 excellent articles and the rest fair to good. Probably most notable improvement is in the number of photos in articles – more and more.

Excellent – relatively new contributor, no opinion.

It gets better. Writers become more confident, the layouts get better. The details are now there, enhancing the production. Links, photos, HTML codes – all improved.

I think there has been much improvement, especially with the use of photos.

The quality has improved.

As computers advance so does the quality increase. Therefore time changes things.

OK.

I think it’s great and we have improved it with the pictures, etc.

**Does the site do a good job of representing your local community?**

Do not know.

Not really. There are not enough articles devoted to local community events. Only 4 Stringers really tow on this aspect.

Yes.

It represents well one segment of the community: a group of knowledgeable experienced, willing seniors. It shows brief glimpses of other parts of the community in the stories we write. So yes, it does a good job in representing our people.

We are putting Melrose in a favorable light in exposing ourselves to the Internet readers worldwide.
It represents the good things in the community. It does not cover all the aspects of the city.
Excellent as we all pitch in.
Probably not too good – a few articles represent the community but we don’t do too many.

Do you have a leader in the Silver Stringers community? If yes, what does he/she do for community members?
Yes. From the beginning we have had one person who kept the program moving in three directions: computer knowledge and using the publishing software; including photos in the stories; and generating story ideas among the group.
I think no leader. Talents are equally shared.
We have many leaders – natural leaders. There is no elected official. The editorial committee is volunteers. A chairman serves for two weeks only. The system works in that it gives every member a time to shine – but it fails in providing continuity and long-range planning. It also avoids assignments and makes participating very easy.
Yes, his publishing background and knowledge of computers is a definite plus in our efforts.
So far, not just one leader.
Not so much and individual as group leadership. Yes – keeps the group together in interest etc.
Yes, one who knows the computer, HTML, etc.

What issues have caused disagreements/conflicts inside the group? How do you deal with these issues?
Haven’t had much conflict.
I have remained apart from them – I believe women have no conflicts.
Most disagreements and conflicts have been worked out on an informal full membership discussion and conclusion.
One personality issue still persists, which has been dormant for last 8-10 weeks. At some point it must be addressed.
Being fairly new, I haven’t noticed any “yet”.
One, an overbearing personality. Two, the lack on continuity and planning. But then, personality disappeared and there are very few disagreements.
What should not be published and reasons why. Dealt with at editor’s meeting and at general meetings when necessary. Personalities and outside experience have caused conflicts. Some are discussed – some are ignored – all handled politely.
For the prima donna – we listen and let the steam blow out of the kettle.
Some of the articles the editors didn’t like. Discussed with the author.

How often do you use the Internet? If you do, did you start using the Internet because of this project?
No computer
Never! Ashamed of myself! I still hope to learn how to compute!
As one of the editors, I use Internet quite often with Mirror. Also use other aspects of Internet more and more (library, ordering medication, some purchases, bridge, research, etc.) Yes, purchased new computer and a modem because of the Silver Stringers project.
No personal skills with computer.
Daily. Several times. Research on the stock market, material for stories, amusement. I have been using a modem to collect research from Dow Jones news retrieval since 1983. But yes, I began using the Internet on joining the group.
Daily, yes.
Yes, I started using the Internet because of this project. I use it a few hours a week
Have always used the Internet as a serious avenue to communications. Also Email to others in the group.

Frequently. No.

About once a day. Yes.

**What do you think of the Internet as a publishing medium?**

It is gaining status and usage but it is limited, since all cannot use it and book form is harder, it can be carried!

**Plusses** — great exposure to world; no space limits; software permits writing, editing, photos, layout flexibility, contributors from anywhere

**Minuses** — Number of Internet sites exploding; publication requires reader action to "click on" site; screen not as user friendly as hand held paper or magazine

Far-out (as my kids would say).

Fine. Versatile. One major problem is that webowners try to pack too much on one screen... ten pounds of junk in a three pound bag. Most of it is bad layout, really bad. Compare it with more "professional" layouts seen on TV. The situation is exacerbated by the smaller size of monitors (The Stringers Mirror, however is superior layout).

I'm sure glad Al Gore invented it! It is unsurpassed for the dissemination of information, news and social correspondence.

Great!

**How else could we communicate if not by Internet. Certainly we could not send up smoke signals.**

Intriguing.

I only know it from the Melrose Mirror, but I'm impressed.

**What does your website offer that cannot be found in other media? What more could it offer?**

Do not know — but comments say little of politics is dealt with.

A group of seniors who have personal experiences and historical references that reach back to the early 1900's. A technical support arm that is continually improving and teaching a defined audience that includes current and former Melrosians extended families and all senior citizens who can identify with Stringers experiences.

Don't know.

Ours is a "do-good" publication. The readers get upbeat stories, no mayhem, no murder, no rape, no bad news. The worst so far was the story on the death of a local hero! We are a "The No-Bad-News News". And good layout. And imagination.

What is Melrose and why does it offer a great place to live? More to offer? I cannot think of any.

I have received friendships by "talking" to long ago friends who had drifted away.

At home — direct communications. Also offers direct feedback on related subjects.

Personal stories of the membership.

**Would you like to co-operate more with local media organizations? How?**

For the local Free Press we plan to have the editor publish selected stories this summer. We should re-start with local cable channel (MMTV) - include video of a Wednesday meeting and a visual view of Mirror featuring URL (Mirror available at the Library).

Not sure.

Yes. We would like to do lots more projects but, unlike a commercial operation, operators cannot be given assignments. But yes, the local rag has more circulation locally than we do so it is important to our purpose that we use the newspapers good will.

Yes. We are meeting with the Free Press Editor tomorrow to offer suggestions on reciprocal publishing.

We have established some rapport with Brighton, Danvers and Mary McCullock with Saugus. Whether joining with others will cause confusion of aims and purposes — I do not know at this time.
We do cooperate with the Free Press.

What is your view on advertising on your site? What kinds of advertisement would you like to see (or not like to see) on your site?

No tobacco, liquor, alcohol ads; prefer NO ads – so phony and annoying

Have no interest in seeing advertising – to me it would divert readers from Mirror content.

Ads vis-à-vis elders and young people.

Okay if we maintain tight control – and if the price is right. I would not want the site to look like the vast majority of commercial sites – overburdened with flashy gimmicks – bad layouts – junky ads.

No ads in my view. Selective ads, if needed for income.

I ignore what’s being advertised now.

Only ads needed are the build up the Mirror. One gets bombarded, if not careful, from other commercial sources on the Internet.

Not necessary. But donations would be most gratefully received.

I guess not.

Do you read websites published by other communities? Can you name any?

No (x2).

I read the Danvers Web site and Jr. Journal on a fairly regular basis.

Yes. Junior Journal. Danvers Oracle, Revere Satterlights, Blacksburg Buns, Morgantown Schmultz, I don’t read them regularly, but I keep abreast of many.


No, not now – but I think I’ll try it.

There are other sites such as Danvers, Brighton and Saugus, but other than their monthly publication – which we do not get too often, unless someone brings one to us – we read what the Stringers write.

I haven’t really. JR Journal and Danvers Oracle.

Have you met people from other communities that publish online? Have you collaborated with them in some way?

No (x3).

Not yet.

Yes, yes. Revere, Danvers, Brighton – teaching, guiding. Also many reps of corporate sponsors.

Yes. I’ve not yet collaborated.

Once in a while a story gets on the AP wires and goes all over the US – much to the surprise of the Stringers. We need newspapers, but it’s sort of a one-way street. We have enough talent in creative writing to use facts to produce fiction or fact to give knowledge and meaning to other readers.

People from Danvers and Brighton. By meeting and talking to them.

How would you like to develop this activity in the future? What would you like to do or learn in the future?

How to use and read the Internet!

If we collaborate, I think it should be on a formalized basis in 2 ways (a) have 2-3 volunteers from Silver Stringers serve as liaison with one community group. Have them establish what they feel can benefit both parties. Small steps first.

Computer skills.
Yes. Establish a world-wide association of either seniors or town people, using as the knot the idea & the Mirror.

Improvements in layout. Write more. Learn retouching and enhancing our photos.

Many steps on the computer have to be memorized and these should be reviewed individually and by the group. Without procedures there would be no means to an end.

Awareness of activities in the community. To develop use of Web connections.

I'm having trouble keeping up with what we're doing now.
Appendix II: SilverWire participant group profile

Example profile was filled by the members of the Silver Stringers group.

### General Information

<table>
<thead>
<tr>
<th>Title of your group or Silver Stringers</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website</td>
<td><a href="mailto:melrose@media.mit.edu">melrose@media.mit.edu</a></td>
</tr>
<tr>
<td>Description of your activity</td>
<td>Milano Senior Center, Melrose, MA 02176</td>
</tr>
<tr>
<td>URL</td>
<td>Milano Senior Center, 201 West Foster Street, Melrose, MA 02176</td>
</tr>
<tr>
<td>URL</td>
<td><a href="https://silverstringer.media.mit.edu/">https://silverstringer.media.mit.edu/</a></td>
</tr>
<tr>
<td>Email</td>
<td>Milano Senior Center, 201 West Foster Street, Melrose, MA 02176</td>
</tr>
<tr>
<td>Email</td>
<td>Jack Beckley, Executive Director, Council On Aging (1-781-665-4304)</td>
</tr>
<tr>
<td>How many members do you have in your group?</td>
<td>25 and the number of members is steady</td>
</tr>
<tr>
<td>Age of members</td>
<td>Youngest 69 Oldest 89 Average 75</td>
</tr>
<tr>
<td>Age of members</td>
<td>Is the age relevant regarding your activity? YES</td>
</tr>
</tbody>
</table>

### Identity

**What larger communities do you consider being part of or closely connected with?**

MIT Media Lab and the Internet

**Do you think of your group as a community? Why?**

Yes. Because the group fit the definition of a community: gathering together of individuals with a common goal; conduct regularly scheduled meetings; participate in social gatherings regularly.

**What is the geographic location of your group (if applicable)?**

Milano Senior Center, Melrose, MA

Is the location relevant regarding your activity? YES
Would you describe your group to be any of these types?

Publishers (storytelling, reporting and arts from community perspective) YES
Activists (looking for action on issues of interest) NO
Experts (sharing experience, giving advice) YES
Socializing (seeking other people, meeting friends, chatting) YES

How can one become a member of your group?

All senior citizens in Melrose and surrounding areas are welcome; no formal application required; individuals are invited to sit in on weekly meetings and decide for themselves.

What are the benefits of belonging to your group?

Become a part of the exciting world of cyberspace;
Learn computer skills and internet usage;
Social exchange and mutual peer support;
Broadening exposure thru association with MIT Media Lab, Graduate Students and their projects; and the world community.

What are the obligations of belonging to your group?

Contribute stories and articles for the Melrose Mirror;
Work with others on team projects; participate in decision making.

What are the main topics of interest for your group?

Finding stories in community and the person(s) to report on them;
Discussions regarding the computer and better use of it;
Become more familiar with Mirror software, photography, HTML etc.

What issues raise the most heated discussion in your group?

While not heated, group has lively discussions whether or not to publish certain articles (inappropriate or questionable material).

What are the most frequently asked questions about your activity?

Does your group provide computer training courses? (We don’t)
Do you print and distribute copies of the Mirror? (We don’t)

What other groups or communities do you collaborate or connect with (online or offline)? URLs?

So far we have had limited contacts with other senior groups with similar interests; primarily Danvers, Brighton and Revere.

Can you name milestone moments or highlights in the course of your activity?

Successful publication of first Melrose Mirror in fall of 1996. Local and national recognition in local and national media. Melrose Mirror wins coveted “ROSE” Award from state in recognition of excellence for media/community outreach. Dramatic increase in ownership of computers and use of the Internet.
Purpose

What are the goals of your activity?

As retirees, to find interesting and challenging projects with free time;
Utilize and improve on writing skills, interviewing and reporting techniques.
Improve quality of writing and include photos on a more regular basis;
Improve layout of Melrose Mirror;
Seek ways of reaching out to a broader readership;
Formalize duties and responsibilities of the editors.

Have your goals changed as the project has progressed? If yes, how?

Yes. As program has developed, there has been some redirection of original objectives:
Improve quality of writing and utilize more and better photos;
Recruit new members as "Silver Stringers";
Improve physical layout of Mirror front page;
Seek ways of expanding readership;
Formalize duties of editors.

Do you have a mission statement?

No. The following is one that has been suggested by members:
With the support and direction of the MIT Media Lab staff, the Melrose "Silver Stringers" are committed to publishing the Melrose Mirror, an on-line Internet publication, on a regularly scheduled basis.

Do you have a motto?

No. Members have been asked to submit some ideas for a motto.

What is the target audience for your website (if any)?

Primary audience – Current and former residents of Melrose, MA, their families and friends; secondary – anyone on the internet who shares interest in some of the seniors’ experiences through the years.

Communication

What media do you use for publishing?

Utilize Internet website provided through the MIT Media Lab.

What media do you use when collaborating (before publishing)?

Group meetings of members and extensive use of e-mail.

Are face-to-face meetings important for your group? How often do you meet? What is achieved through these meetings?

Yes, meetings are very important. Stringers meet weekly at the same time; editors meet more often;
Achieve: communications; article ideas; computer assistance; problem solving.

**Do you have subgroups? What are their roles? How do they meet?**

Yes, the editorial committee. Otherwise not on a formal basis. Temporary teams are put together for specific projects, then disbanded.

**What tools do you use for publishing your website?**

Computer utilizing software provided by MIT. Stringers can utilize e-mail to communicate and interact with editors.

**Do you collaboratively edit or review the material, before it’s published? How do you organize this?**

Yes; editors rotate responsibility serving as Publisher each month; each article is reviewed by at least 3 editors before being included in the publishing schedule.

**What other future plans do you have for your activity?**

Subject to updating MIT software, we hope to be able to include audio and streaming video on a more regular basis.

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Appendix III: Example Poem

Jumprope Chant For Elders

... Out goes Y-O-U

*Natalie Thomson*

Lost my hanky
I am cranky
Bones are creaking
Nose is leaking
Knees are snapping
Brain is napping
Pain in shoulder
Getting bolder
Toenails toughen
Breath is puffin’
Sights’ appalling
Hair is falling
Can’t remember
Last September
Mem’ries going
Nose ain’t blowing
(Then it’s dripping)
Heart is skipping
Sometimes quick’ning
Veins are thick’ning
Pill box beeping
Friends are sleeping
(While I’m talking)
Limp while walking
Hearing’s failing
Thyroid’s ailing
Hairs grow in
On cheek and chin
Head is hurtin’
One thing’s certain
Age is showin’
I’ll keep goin’
It’s a song
That must be sung:
Body’s old
But Spirit’s young!

*Illustration: Russ Priestley*

June 2, 2000