Community Memory: The First Public-Access Social Media System

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The first publicly available social media system, which opened in 1973 near the UC Berkeley campus, surprised its creators with the breadth of creative uses to which it was put by the users. Accessed through walk-up Teletype terminals on a mainframe time-sharing system, the Community Memory system was free, let users enter their own information and search commands directly, and relied on users' imagination to define indexing words and make searches.

Positioned in an entryway of a student-owned record store in front of a musician's bulletin board, the system quickly attracted heavy usage by musicians, as might be expected, but also attracted items such as typewriter graphics, advertisements for a poet, and a spontaneous learning exchange item. The system went through three generations over a span of 19 years and was structured as a community information exchange available to noncomputer users. In the last generation, 10 terminals were base-level IBM PCs running text browsers on monochrome displays with coin acceptors attached. The mainframe had reduced to a 386 XT running a version of Unix. Various information-retrieval methods were implemented during the three generations, with the final system using both an indexed and a networked database structure so that items

could be comments on other items as well as be organized by index words. A local theater critic has reported that he learned to write through the second-generation system as a teenager, trading rhetoric with his friends.

I have said that Community Memory "opened the door to cyberspace and found that it was hospitable territory," due to the creativity it facilitated on the part of the users. Community Memory failed to become self-sufficient in large part because the rising level of online home computer use overshadowed the idea of neighborhood information centers, and no effective marketing work was done to promote that idea.

August 8, 1973

August 8, 1973, was not a particularly noteworthy day in Berkeley, California. Leopold's Records one block from campus was open for business as usual in its upstairs location at 2518 Durant Avenue, selling records to students and student-age people. Leopold's had been established a few years before by the Associated Students of the University of California—the student government—as an attempt to drive down the prices of music recordings (it was successful there).

Leopold's had no display window. Access was through a front door, up a stairway, and through a corridor. A steady stream of customers made this trip in search of the latest recorded music at reasonable prices. At the end of the corridor, before entering the main sales room of the store, a bulletin board hung on one wall containing hundreds of cards and pieces of paper, all used by people trying to make a living in the music business.

On this day, however, something was new. Before the bulletin board was a table, and on it sat a squat box made of corrugated cardboard with a window on its sloping front made of clear vinyl plastic. Two holes in the front face revealed vinyl sheets with asterisk-shaped cutouts, like flexible cat doors. On the right side of the box was bolted a small cooling fan that purred.

A handmade poster, with psychedelic lettering, read "Community Memory." Inside the box was a teleprinter—a Teletype Model 33 ASR that had gone through three years' service as a commercial time-sharing computer terminal. Urethane foam glued inside of the cardboard muffled the whirr of the teleprinter's motor and the "chunk-chunk-chunk" of its print head.

Standing beside the terminal was a young person, dressed similarly to most of the students and other people entering the store. As they came toward the terminal, this person would say, "Would you like to use our electronic bulletin board? We're using a computer."

"Computer" at the time was a word fraught with implications of social control through technology. No individual owned a computer, it was understood; they were far too expensive, and besides, their uses were for maintaining and extending the regimented order of society, an order viewed with fear and loathing by members of the counterculture for whom Leopold's was a cultural mainstay. The organizers of Community Memory expected to have to contend with shock and outrage at having defiled the record store with this oppressive machinery.

Quite to the contrary, as it turned out—almost 100% of reaction was positive, evincing pleasant anticipation, with the most common comment being, "Oh, wow, can I use it?" The attendant was standing beside the terminal—not between it and its prospective user. The two holes invited users to put their hands through to the keyboard, whose carriage return key was colored green.

Pushing the return key caused a prompt to be printed on the paper visible through the window: "Type a word you're interested in and push the green button." Doing so usually (but not always) resulted in the printer typing out the first lines of a number of bulletin-board items that had earlier been entered by other users who had indexed it using that word among others.

The information was stored on the disc drive of a time-sharing SDS-940 mainframe computer in a warehouse in San Francisco. Under the table in Berkeley sat an early modem capable of no more than 300 baud (bits per second—Teletypes were limited to 110 baud).

Cradled in the modem box sat the handset of a Bell model 500 telephone connected to a "foreign board" phone line in Oakland with local dialing rates to San Francisco. Each morning the terminal's attendant would place a single call to the computer's number and place the handset in its cradle. Direct electrical connection to the phone network was still forbidden and the subject of a lawsuit. The data were coupled acoustically to and from the handset, and the free call lasted all day.

The poster explained an example of using this new appliance through the example of someone offering ducks for sale—"Ducks eat snails—ducks for sale"—and showing how such an item would be entered with indexing words attached so that users could find it later.

There were no personal computers, no Internet, no "cloud," no wireless. Everyone knew what a paper bulletin board was and how it worked; the information came from a subset of the people who looked at it. Sure enough, within a few months, the musician's bulletin board had shifted over to the Community Memory terminal.

This was the system through which, as I have said, "we opened the door to cyberspace and discovered that it was hospitable territory." Where did it come from, what forms did it take, and where did it go?

History

Community Memory was the result of the work of many people, all of whom identified to different degrees with the counterculture of the time. The group that obtained the computer used for Community Memory was started when three computer science students, Pamela Hardt, Christopher Macie, and Nels Neustrup, left the University of California at Berkeley in 1970 after the Cambodia invasion and the Kent State killings, which impelled them to attempt to put into practice ways of making computers available to people who stood in opposition to the trajectory of American society.

I had spent several years, both while at UC Berkeley and while working in Silicon Valley, exploring forms of media that might be effective in facilitating broad-based community formation, a process I had experienced in 1964 during the Free Speech Movement, an event that was seminal to the development of the counterculture in the Bay Area.

My explorations brought me into contact with Michael Rossman, who was then distributing sections of his manuscript for "On Learning and Social Change" among communal households in Berkeley.[1] Rossman's writings examined possible technological tools involving the telephone system that might be useful in social reorganization, and I wanted to see what I, as an electronic engineer, could do to help realize these devices.

At the same time, I also made contact with a household including Jude Milhon (later "St. Jude" of *Mondo 2000* magazine), Efrem Lipkin, and Mark Szpakowski. Lipkin was a systems programmer who was exploring in the "World Game" events structured around the work of R. Buckminster Fuller and serving to attract like-minded people.

As a result of my experience and analysis, I had concluded that changing the technology and expectations of information technology was fundamental to enabling the ongoing social change required to approach a sustainable and humane society. I became convinced that centralized edited media (such as the press, including the underground press) would never make possible the many-to-many communication that had worked magic at Berkeley. I determined to focus on systems using the telephone network.

Computers did not enter into my thinking until I was assigned to learn the BASIC computer language by my employer in 1970. The course was conducted by young associates at a "service bureau" where access to mainframe computers was available. They proudly demonstrated how they could tell that the computer we were using had been turned off and our jobs shunted to another computer thousands of miles away, and showed how files could be made available to various tiers of users through variations on the file names.

Based on this information, I realized that a network of computers could facilitate formation and re-formation of communities of interest without requiring centralization. This was a radical thought for the time, and I was taken aback, wondering how to implement this, asking myself where I could get access to a computer.

Within a year, I had the outlines of an answer. I was directed to Resource One, Inc., a nonprofit established by the three dropouts from Berkeley with the goal of making computer services available to the counterculture. Through an inspired solicitation effort taking advantage of the San Francisco business establishment's inability to fully grasp the implications of the counterculture, the group was able to secure the long-term loan—in effect the donation—of a time-sharing mainframe computer with enough money to set it up and add a significant disc storage unit. I joined Resource One in 1972, immediately after my delayed graduation from UC, and brought Lipkin and his household into contact with them.

Resource One had cultivated contacts in the computer counterculture, centered as it was around Xerox Palo Alto Research Center and Stanford's Artificial Intelligence (AI) Lab. From former members of the defunct Berkeley Computer Corporation, they obtained an operating system for the SDS-940 along with the help of L. Peter Deutsch to install it and get it running. Fred Wright, a denizen of the Stanford AI Lab, designed and built an interface for the 940 that emulated a minicomputer and would accept a commercially available controller for the new disc storage unit. At the time, Fred was the only person in the group who dressed in "hippie style." None was, so far as I could tell, involved in any significant way with drug usage.

Resource One had taken on the corporate shell left by the defunct San Francisco Switchboard—one of hundreds of tiny volunteer information-referral services usually oriented around an interest area or identifiable community. I had explored among these services and found them to be motivated by their causes and not interested in interconnecting, but the stated intent of Resource One was to provide an information-sharing service for the switchboards.

At one point in 1972, Resource One was visited by Richard Greenblatt, a legendary software hacker from the MIT area. I recall his animated challenge to the group to develop an information-retrieval program in 24 hours, a development process that became the point of origin for Resource One Generalized Information Retrieval System (ROGIRS), which incorporated sophisticated features allowing dynamic updating of index pointers. Efrem Lipkin took a leading role in this development and brought in Milhon and Szpakowski to help.

In our discussions, we agreed that the computer would not have the capability to store and retrieve primary materials, the actual communication among people that would be the stuff of community. Rather, the computer could be useful in the exchange of "secondary information"—pointers to other people that would facilitate communication through direct contact, telephone, or even postal media.

We also understood the undesirability of making one computer the hub for all information, as it could be co-opted by the power structure should it ever show signs of becoming a danger. We were aware of the ongoing development of computer networking technology and saw it as a way out of the trap of centralization; although it was not available to us at the time, we designed to be able to use it in the future. We felt that the human networks of the switchboards (then a significant artifact of the counterculture), amplified by the use of ROGIRS, would allow for synergistic exchanges and interactions among young people.

Unfortunately, once we had the system working adequately and went out to reconnect with the switchboards, we ran into a brick wall of incomprehension as well as economics. We were proposing that switchboards, none of whom had a measurable budget, somehow spend $150 per month (in 1973 dollars) to rent a Teletype terminal with modem in order to use a software system that we could not explain to them. We got precisely nowhere with the switchboards.

A series of visits to other possible users ensued, and one conversation was seminal. Librarians at the Bay Area Reference Council—the "library of libraries" that made possible the sharing of books among libraries—heard us out and then commented that we seemed to be a library with no books on the shelf. They suggested that we put some "books on the shelf" and then see where we could go with that.

Lipkin, who had been part of the discussion, took this as a challenge to put one or more terminals in public locations to see what information might accumulate on the system. It was not an idea I would have originated, but it seemed to be a possible route to avoiding irrelevance. A group of us within Resource One began designing the "electronic bulletin board" needed to implement this experiment.

The capability of ROGIRS to handle new indexing words at any time became the enabling technology for what was to follow. Although the designers assumed that this bulletin board would have at most three sections (jobs, housing, and cars), there was no effort expended to limit the topics accordingly, and users were instructed to use their imaginations in proposing new index words and in using them.

Several people, including Milhon and Szpakowski, contributed to "seeding" the Community Memory system with items requesting suggestions or responses, and these items involved a wider range of topics than the three originally assumed to be dominant. Resource One received a friendly welcome and approval from the student senate, who, as owner of Leopold's Records, had to give assent to stationing a terminal there and installing a phone line.

No announcement was made of the opening of the Community Memory terminal. I placed an article in the *Berkeley Barb*, the most prominent underground paper in the area, explaining the theory and practice of Community Memory. The announcement ran a week after the opening. Otherwise we made no further publicity.

Initial Results

"Music" became the largest identifiable topic, given the proximity to the musician's bulletin board and the economic nature of the information exchanged thereon. I myself witnessed more than one example of stereotypically countercultural users advancing to the keyboard without acknowledging my assistance and performing well-specified searches to extract lists of prospective clients. I got the strong impression that their consciousnesses were several levels above mine at the time.

Although the consensus among the programmers had been that only three topics (jobs, housing, and cars) would account for the bulk of the traffic, in reality the results were much more broadly spread out, based at least on keyword frequencies. Notable examples included a poet, Jon Thompson, advertising his wares with teaser verses and a phone number for further negotiations. Several versions of typewriter graphics showed up (e.g., a picture of a sailboat). There were many interesting exchanges between people who knew each other only through the user names they posted with each item.

One of the most significant examples was the "bagels dialogue," resulting from an item seeded by Milhon asking where in the Bay Area bagels might be found (this at a time before the proliferation of the bagel as a popular bread). Two responses gave the expected location of stores, but a third response gave a phone number and offered the services of "an ex-bagel maker (who) will teach you how to make bagels."

This was golden because it was a spontaneous validation of an idea posited by the philosopher Ivan Illich in his controversial book *Deschooling Society.*[2] Illich took a radical approach to deconstructing the educational establishment by abolishing institutional education. The replacement would be, according to Illich, the development of informal networks of instruction such as he had observed in Central America. Illich posited that "learning exchanges"

could come into existence as marketplaces for skill exchange, and (in a coda) that perhaps computers could be useful in implementing such exchanges.

Unfortunately, we were never able to follow through and discover whether anyone took advantage of this or other learning exchange offers; we considered the system a development prototype rather than a valid research example. In one personal example, however, the concept of the system was validated for me when I made contact in 1974 with a former member of my student residence co-op who was moving into the digital product area and needed help with engineering. This contact resulted in our sharing a workshop and my licensing several significant personal computer designs to his company.

During this implementation of Community Memory under Resource One, Lipkin, Milhon, and Szpakowski turned out several printed summarizations and selections of items. Some of these are in the possession of the Computer History Museum in Mountain View, California.

In January 1974, Resource One made an arrangement with the librarian at the Mission Branch of the San Francisco Public Library to place a terminal on their front desk. This became the second terminal of the first-generation system, joined by a third terminal in the Community Memory satellite office in Berkeley, located in a communal house at 1545 Dwight Way. This terminal was not advertised for walk-in access, nor was the fourth one, located in the Oakland offices of Vocations for Social Change.

Also in early 1974, the terminal at Leopold's was closed down and moved to the Whole Earth Access Store on Shattuck Avenue in downtown Berkeley. This was a display (CRT) terminal leased with a service contract. Because modems at the time cost about $300, there had been an ongoing discussion among the potluck attendees in Menlo Park about a homemade version, and I undertook the design of such a modem, specifically architected for reading data from cassette tape to provide "teaser screens" without loading the computer.

A prototype of this design running at 300 baud was used with the Whole Earth terminal, and the design later became the first kit modem marketed among the personal computer hobbyists (the adaptability needed to read data from cassette tape required a self-adjusting capability that eliminated a major calibration problem). Problems with the maintenance of the terminal led me to consider how to design computer hardware to be survivable in public-access environments, which opened my path to the design of personal computers.

Theory and Background

The beginning of what became known as "the counterculture" stemmed from the Free Speech Movement at Berkeley in 1964. Starting as a reaction by students active in politics and civil rights activity against a clumsy attempt by the University of California administration to suppress organizing opportunities on campus, the ensuing struggle broadened to include thousands of students over a period of two months, climaxing in a massive sit-in with almost 800 arrests, after which the faculty voted to support the student position.[3]

During the process of the struggle, a mass of poorly connected students came together to function as a community, mobilizing distributed resources and creating a bidirectional network of information exchange, with the result that the vaunted administration of the university was fought to a standstill and forced to abandon the principle of "*in loco parentis*," under which student populations were infantilized. One of the participants, Marvin Garson, observed after the dust had settled that "barriers to communication among students had gone down" in the process, with the result that strangers had coalesced into a community capable of concerted action.[4]

The phrase "the dust had settled" should in fact be withdrawn; the dust never settled. In the immediate aftermath of the Free Speech Movement, thousands of students left the university to establish what became the Haight-Ashbury neighborhood, with its effort at community formation. Students established counterculture publications, and others set up the first

underground newspapers. Organizing protest activity against the developing Vietnam War started, as did the environmental movement and many other social justice movements.

In 1969, another upheaval occurred in the form of "People's Park," an anarchistic effort to turn unused university land into a park built by members of the community. Crushed eventually with deadly police force and military occupation, it provided powerful experiences and imagery of community formation and action, along with experience in what works and what doesn't, of rhetoric versus experience.

When such popular upheavals happen, they produce secondary and derivative activity that can have long-term importance. A group of architects and architecture students under the name People's Architecture compiled and published (in the underground press in 1970) a plan for a future Berkeley implementing countercultural and ecological principles. Along with many other ideas was posited the concept of the "Life House"—houses whose occupants make a room openly available to neighborhood people as a micro-community center.

This was already happening in the countercultural Bay Area—people who took a particular interest in one or another area would declare themselves to be the "switchboard" on that topic, an information-exchange node using index-card and telephone technology. The "Life House" concept broadened the area of interest, narrowed the physical area of coverage of switchboards, and meshed to some extent with what many collective households were already doing—posting bulletin boards in their front yards and "free boxes" where people could leave surplus clothing and goods for others to take as they saw fit.

At the time, I was making the rounds of various collective households in Berkeley hoping to devise ways to implement a courier-delivered mimeographed ("desktop-published," to use a later term) classified ad publication. My experience working in Silicon Valley had informed me about some basic capabilities of computer networks, and I began to conceptualize a network of Life Houses residing on a computer network able to instantly exchange information of all kinds,

allowing users to match needs and resources in order to further community formation and re-formation.

I could see that the renaissance sought by the counterculture could be brought to immanence through a sensitive application of digital technology within a social context. Theodore Roszak, writing in *From Satori to Silicon Valley*, a precursor to *The Cult of Information* (1986), later ridiculed this outlook as a "zany" combination of "reversionary" and "technophilic" worldviews,[5] but I have never been able to understand the supposedly necessary contradiction between these outlooks. They represent two sides of human nature, which often must be brought into reconciliation, but not polar and mutually destructive facets. Thesis and antithesis, in a healthy individual or society, result in synthesis.

Thus, in 1971, when I was introduced to Resource One, I found a group that had done yeoman work in securing the previously unattainable computer, a mainframe designed for time-sharing use together with sufficient money to make a good start in setting up and using it. They pursued a vision of using it to interconnect and share the files of the switchboards, and they had developed a deep network of support among computer experts in the Bay Area with countercultural understandings. Stewart Brand interviewed the group in his research for the book, *II Cybernetic Frontiers*,[6] an outgrowth of an article for *Rolling Stone* magazine that appeared in 1972.

I brought to the group my ideas and observations about community enablement and introduced Michael Rossman to the group (I was able to give Rossman a crude terminal in the form of a "portable" repackaged Teletype 33 teleprinter that required some repair effort; in this way, he was able to access the EIES conferencing system run by Turoff and Hiltz at the New Jersey Institute of Technology).

The concept of Community Memory took shape as a network that was as distributed as the technology would permit (we understood the perils of making centrally vulnerable the pool

of information necessary for the continued survival of communities not necessarily supportive of the power structure), with access points distributed around neighborhoods having significant countercultural populations, accessible by anyone who could communicate in writing (the available technology for computer-mediated exchange).

This network of centers would be accessible for commercial and noncommercial purposes because economic activity is essential for community survival, along with cultural and interpersonal exchange. The computer network would not be crafted as a medium of primary communication but rather for handling secondary information—pointers on whom to call, write, or visit in order to develop a relationship for a given purpose.

The important network would be a human network of people who knew and related closely to other people, a network that could function without the computer but whose members would never be able to come together in urban society without the computer's capabilities. It would be an antidote to the mass-media intermediation and in effect begin the reconstitution of the "commons of information."

Practice

One can see why we did not want to concentrate on computer-literate and computer-enabled users in building this network. To simply split off a minority for empowerment would not do; we had to bring everyone along, or at least make it possible. In later system implementations, we would put terminals in co-operative supermarkets, laundromats, cultural centers, and stores, never requiring anyone to learn the use of an editor or file structures.

We did what can only be called leading development work on text-based WYSIWIG display, all using the most basic personal computer architectures as intelligent clients, which could be implemented on what I call "trailing edge technology"—minimal basic IBM PC systems. Carl Farrington architected and implemented a text browser for our third-generation

system (1990–1992), which would today make most efficient use of wireless interconnection (Lipkin had foreseen packet-switching, relational databases, and the predominance of the C language in the 1980s). We implemented systems based on indexing databases, relational databases, and a hybrid indexing and network database architecture.

For all this technological acumen and accomplishment, we suffered for want of skills in marketing (which I define as "selling the idea of the system"). We relied too much on the concept of "build it and they will come." At one point late in the process, I had a discussion with someone who was not only computer literate but very connected into the network of Berkeley neighborhood organizations, telling him that we probably had "the cure for the common meeting." He was instantly interested and asked for more details. Alas, I did not follow through, as I now understand I should have, by working with him to establish an experimental use case of our technology that would help relieve the deadly necessity for participants in neighborhood process to tolerate endless meetings. He did not take the lead, and there was no further work in that area, and I could not give it my full attention due to economic circumstances and my lack of confidence in convincing others to do work that I had conceptualized.

The Community Memory Project closed operation in 1992 when funding ran out and most of the members had drifted away. By then we had gone to inputting much information from public sources at our office, although our theory held that a robust system would require people to be as much sources of information as consumers. We donated the contents of our storage locker to the Computer History Museum and were seen no more.

Looking Forward

There is no indication, in my opinion, that the need for a widely networked information-exchange structure tailored for secondary information in a locally centered physical context is any less now than at any time since 1973. In fact, it would seem that its time may just be coming,

based on conversations with members of the latest generation of technologically empowered activists.

Community Memory's model was based on understanding behavior in public space—the processes of display, nucleation, interchange, circulation, and reconstitution that has been going on for millennia wherever the public comes together—in agoras, piazzas, market fairs, and town squares. While implementations evolve, the basic habits remain the same because they emerge from cultural evolution. Thus, people in the street transfixed by their smart phone screens have their imitators a century earlier in people lining the streets transfixed by newspapers. What is different is the potential for changing the topology of information flow through radically different media.

As the first public-access social media system, and as one that came to no definitive research conclusion, Community Memory should, I believe, be revived as a participatory implementation with an attached research arm. There are several possible ways in which this could be done, but those are beyond the purview of this chapter.

Epilogue

As we have seen, it is not a stretch to claim that "we opened the door to cyberspace and determined that it was hospitable territory," as written above. Subsequent explorations have remained within fairly tight boundaries, with limited imagination applied. As the sage Ted Nelson reportedly once said, "Everybody wants to be second." In a world for which sustainability has become an ever more urgent issue, it is irresponsible to act as if only the newest, most popular, and temporarily remunerative artifacts are worthy of attention and that old work is irrelevant. I look forward to seeing how new eyes see the artifacts and experiences from generations previous. Fortunately, technology moves fast enough that most of us are still around to watch and possibly advise.

Notes

1. Michael Rossman, *On Learning and Social Change* (New York: Random House, 1972).

2. Ivan Illich, *Deschooling Society* (New York: Harper and Row, 1971).

3. Marvin Garson speaking at a Berkeley Independent Socialist Club forum on the Free Speech Movement in January of 1965 (no recording or transcript exists).

4. Theodore Roszak, *From Satori to Silicon Valley: San Francisco and the American Counter Culture* (San Francisco, CA: Don't Call It Frisco Press, 1986).

5. Stewart Brand, *II Cybernetic Frontiers* (New York: Random House, 1974).

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