

## Chapter Seven

# RESOURCE ONE

**I**t's raining in California. Levee-busting rain, water rushing to the ground like a lover kept away by drought. In the Marin Headlands, north of San Francisco, the brackish tidal plains are throbbing, egrets buzz the grasses, screeching, and I'm waiting by a flooding bus stop, raindrops on my glasses. Sherry Reson pulls up in an old Camry, opens the driver's side door just enough to poke a mop of curly hair out, and waves.

She drives me up the road to her place, a slate-gray bungalow weathered by the wind. On the way, she briefs me excitedly about the group she's gathered, which we find perched around her dining room table, eating spongy feta, broad beans, and spinach salad from wooden bowls. As I divest myself of my wet outer layers, they look up cheerily from their conversation. They've been catching up. Only recently have they reconnected with one another, but forty years ago, alongside a hundred other dreamers, hippies, and iconoclasts, they all lived together in a technological commune in San Francisco called Project One.

They'll explain to me that Project One was a mustard-yellow warehouse South of Market. Inside its eighty-four thousand square feet of interlinked habitations, they slept in hand-built bays one hundred feet wide and gathered for community meetings on the fifth floor that often

ended in shouting matches and tears, or music and laughter, depending on the day. The stucco doors were tiled with mosaic patterns, there was a hot tub for communal bathing, and some residents lived in dollhouse estates of plywood and Sheetrock fastened together with nail guns. The commune's children were herded by a former marine with a foot-long beard; he paraded them around the city, introducing them to Buddhist abbots, Rinpoches, Sikh gurus, and Taoist priests.

The writer Charles Raisch called Project One a "pueblo in the city," a village peeled from the earth and turned inward until its edges met tip to tip. "It's fifty of us sunbathing and barbecuing on the roof," he wrote. "It's seven turkeys and four bands and a bowling lane size, makeshift banquet with Dumpster roses."

At Sherry's house I meet four former Project One residents who have come from all corners of the Bay Area: beyond Sherry, there's Pam Hardt-English, Mya Shone, and Chris Macie. Pam's bay at Project One was a loft bed encased in air-gapped walls of red translucent plastic. Mya slept on a wooden pallet when she came from New York City with only the clothes on her back and dreams of becoming a full-time revolutionary. Sherry inherited a little house with white steps and a front door. They cooked on hot plates, shared bathrooms, and worked in the same building they called home, which was full of political organizations, artist studios, and production facilities. But even in a warehouse full of documentary filmmakers and *Hair* dropouts, their office was stranger than most. Right in the middle, encased in a clear box of Lexan polycarbonate sheeting, they kept a mainframe computer the size of ten refrigerators.

The computer, a Scientific Data Systems 940, was one of only fifty-seven of its kind on Earth. It was easily the most valuable thing in the building, an absolute treasure to this group of hippies. Pam, Sherry, Chris, and Mya were only a few among the rotating cast of its minders, all patrons of the community computer center they called Resource One.

Like the Honeywell 316, the SDS-940 was serious hardware, and it also contributed to the backbone of the early Internet: in 1969, when it was the best computer money could buy, an SDS-940 at Stanford became

one of the ARPANET's earliest hosts. By 1972, when Project One acquired theirs, the SDS-940 had become more Model T than Thunderbird, but it was still a \$150,000 mainframe—far beyond the reach of twenty-somethings paying a nickel a square foot to live in a disused candy factory. And yet there it was, wired up by self-taught electricians who hauled “big noodles” of industrial power lines into their makeshift clean room. They had Pam to thank for that.

Pam Hardt-English is a deliberate, soft-spoken brunette with the studious air of a woman with well-kept secrets. She came alive at UC Berkeley, a flashpoint of the anti-war and Free Speech movements. “The school was on strike most of the time,” she remembers. Even the computer science department was organizing, and when the United States bombed Cambodia, “all the computer people got together,” she told a documentarian in 1972. “It was the first time many of them had ever been involved in anything. It was really exciting. We started talking about building communication networks.” In the summer of 1970, she and two fellow Berkeley computer science students, Chris Macie and Chris Neustrup, dropped out of school and moved into Project One. They made it their mission to get the counterculture connected.

In a sense, it already was. The Bay Area was overrun with underground newspapers and houses with bulletin boards and free boxes in their front yards. The *Berkeley Barb* ran back-page ads for resistance organizations, and a group called the Haight-Ashbury Switchboard had even built a sophisticated phone tree in the late 1960s, linking human “switchboards” to one another to help distraught families track down their wandering hippie kids. This grew into an informal network of interest-specific Switchboards in the Bay Area, one of which, the San Francisco Switchboard, had offices at Project One. With a couple of phones and boxes of index cards, it coordinated extensive group action for quick-response incidents like the 1971 San Francisco Bay oil spill—an early version of the kind of organizing that happens so easily today on social media.

Resource One took up where these efforts left off, even inheriting the San Francisco Switchboard’s corporate shell. When Pam and the

Chrises moved into the warehouse, their plan was to design a common information retrieval system for all the existing Switchboards in the city, interlinking their various resources into a database running on borrowed computer time. "Our vision was making technology accessible to people," Pam explains. "It was a very passionate time. And we thought anything was possible." But borrowing computer time to build such a database was far too limiting; if they were to imbue their politics into a computer system for the people, they'd need to build it from the ground up. They needed their own machine.

This was long before the personal computer as we know it, and long before even the microcomputer. Resource One had its sights on a mainframe system, the kind tended by experts in the large installations that had evolved from the efforts of early business programmers like Grace Hopper or Betty Holberton. Pam made a list of institutions and companies she thought might have a surplus mainframe lying around. After an exhaustive series of phone calls and meetings, she eventually cut a deal with the TransAmerica Leasing Corporation, which had a few SDS-940s gathering dust in a warehouse, one of them coming off three years of heavy use at Stanford. She convinced them by speaking the language of their common interest: the computer was worth more as a tax-deductible donation than it was obsolescing in storage. That's how, in April 1972, on the bed of a semitruck, the People's Computer came to be delivered to Project One.

That summer, while the other communards plumbed the building's twenty-foot hot tub, the Resource One group installed cabinet racks and drum storage units. Nobody on the job had done anything remotely like it—even the lead electrician learned as he went—and the software was written from scratch, encoding the counterculture's values into the computer at an operating system level. The Resource One Generalized Information Retrieval System, ROGIRS, written by a hacker, Ephrem Lipkin, was designed for the underground Switchboards, as a way to manage the offerings of an alternative economy. Once up and running, the machine would become the heart of Northern California's under-

ground free-access network, a glimmer of the Internet's vital cultural importance years before most people would ever hear of it.

"At different points in your life, different things matter," Pam says to me. Life at Project One was joyful, fast paced, and deliriously ideological, but it wasn't comfortable. To pay her share of rent, she worked nights washing beakers in a medical lab, and when she got back, it was always cold, the concrete floors and high ceilings impossible to keep warm. On a glacial waterbed, she rarely got more than a few hours' sleep every night. The asceticism was part of the community culture, a sacrifice in service of the building's collective goals. "My brother came to live with me because he couldn't find a job," she remembers, "and he went right back to graduate school, saying, 'I can't live like this, cleaning other people's bathrooms, freezing to death at night!' But I didn't care, because I was just so engrossed in what I was doing."

That Pam managed to procure the SDS-940 from TransAmerica is still awe-inspiring. A 1972 *Rolling Stone* profile called it "one of the great hustles of modern times," citing a fellow Resource One communard who claimed that Pam, soft-spoken as she seemed, could draw blood from a turnip. In an accompanying photo taken by Annie Liebowitz, Pam leans over the open, wire-tangled back of the SDS-940 console, big glasses askew, grinning from ear to ear. No other group, in San Francisco or elsewhere, would ever manage to get their hands on such powerful hardware—let alone run it. "Pam was very driven," remembers Lee Felsenstein, a fellow dropout who followed the computer to Resource One. "She had this way of sort of screwing up her face and chewing her lower lip that certainly bespoke inner tension."

"Pamela was about the only person I have ever known," wrote Jane Speiser, a longtime Project One resident, "who was able to make a list of the fifty-three people to be contacted to get a project done, and then actually sit down and, one by one, thoroughly and painstakingly and unfalteringly contact each and every one of those individuals, by phone, mail or in person, until she got to the end of the list, even if it took three months of doing that and nothing else. She was a person of absolutely

stupendous determination. There was no other way to obtain a computer (and the cost of its installation and upkeep) for a group of counterculture freaks."

Beyond securing the computer, Pam spent the better part of three years fund-raising to keep it operational. Hefty electricity bills came for the twenty-ton air conditioners that kept it from melting down. The staff needed a living, and there was always additional hardware to buy and maintain. Ironically, much of Resource One's funding came from the establishment: Bank of America supported the project, hoping to make good with—or monitor, depending on who you ask—the young people then so earnestly upending the status quo. Pam's vision to digitize San Francisco's analog counterculture wouldn't come cheap. She imagined Teletype terminals at every Switchboard phone room, in bookshops and libraries citywide, and within Project One itself, all daisy-chained into a decentralized network of shared resources and vernacular information. "If people needed something," she says, "they could type it in and get it. If they needed help, if they wanted to share a car, or needed resources, they could get it."

Basically, she imagined the Internet.

### LET HER SPEAK

There's an expression in computer science: garbage in, garbage out. Fill a machine with nonsense, and it will cook it up for you without judgment, executing commands precisely as dictated. Feed it truth, and it'll do the same. It doesn't care about the signal's nature. Meaning is *our* business; the computer is a mirror that reflects us back to ourselves, and whoever controls it molds the world in their image. This might be why the counterculture's magazine of record, the *Whole Earth Catalog*, always printed the same coda on the cover of every issue: *Access to tools*.

The year Resource One installed its computer, the *Whole Earth Catalog*'s Stewart Brand pronounced that "half or more of computer science is heads." Brand was inspired by the Bay Area's constellation of forward-thinking research labs, the hacker groups gathering to play

games after hours in university basements, and the scene developing at Resource One, and he wrote about computer science as the realm of mystics, sages, weirdos, and, as he put it, "magnificent men with their flying machines, scouting a leading edge of technology." With language like this, a new archetypal image of the computer user was introduced to the world. Not the studious woman programmer, like Grace, or for that matter the software engineer in suit and tie, but the wild-eyed, wild-haired hacker, who was always a man.

When Resource One finally got their donated computer up and running—its faulty drum storage unit replaced to the tune of \$20K, thanks to Pam's fund-raising—they approached a general meeting of Bay Area Switchboard operators. They pitched their big plan: network the Switchboards, index all the information, and make it available to anyone with a Teletype terminal. It fell on deaf ears. The idea made no practical sense: Teletype terminals cost \$150 a month to rent, and they chattered and whirred; they were *loud*. The Switchboards were human systems, organized ad hoc to suit the organizational needs of whoever staffed them. Hippie operators filed their stuff in boxes, pinned notes to the wall, each to their own. The idea of a hierarchical master system appealed to no one, practically or ideologically.

Resource One had built a library with no books. Efrem Lipkin suggested they forget about the Switchboards and install their own Teletype terminal somewhere. If people could get their hands on it, maybe they'd dig it. In August 1973, Resource One established an outpost at a student-owned record store in Berkeley called Leopold's, a hangout for artists, musicians, and revolutionaries. Efrem and Lee Felsenstein procured a cast-off Teletype Model 33 ASR teleprinter, a little worse for the wear after some heavy service at a local time-sharing company. To help the terminal blend in with its new surroundings, Lee put it in a cardboard box, padded with urethane to mute the whirring, and hand painted the words "Community Memory" on the side.

They expected that most Berkeley peaceniks, like the Switchboard operators, would eye this kind of hardware with skepticism, opting instead for the analog bulletin board on the back wall they'd been using

for years. Computers were the stuff of clean rooms and lab coats, totems of a “regimented order” apprehended with “fear and loathing by members of the counterculture.” The cultural work of making Community Memory approachable to the people fell largely to Jude Milhon, a notorious female hacker and writer who would later come to be known as St. Jude, patroness of the “cypherpunks,” a computer subculture devoted to matters of encryption and copyright. In the 1980s and 1990s, she’d coedit the influential technology magazine *Mondo 2000*. Jude was Ephrem’s girlfriend, and she’d met Lee after placing a sex ad in the *Berkeley Barb* (this was the ’70s, after all). The trio got along famously.

Jude seeded the Community Memory database with provocations designed to lure users to the screen. She’d post proto-crowdsourcing questions, like: WHERE CAN I GET A DECENT BAGEL IN THE BAY AREA (BERKELEY PARTICULARLY) / IF YOU KNOW, LEAVE THE INFORMATION HERE IN THE COMPUTER. Under the table, a modem cradling a telephone handset linked the terminal across the bay to a database on the computer at Resource One. It didn’t take long for the paper-and-tack message board to grow obsolete. One person answered Jude’s bagel question—YOU CAN GET FRESH BAGELS AT THE HOUSE OF BAGELS ON GEARY—then another. A third offered the phone number of a local man who could teach her how to make her own. Community Memory became a free-for-all classifieds, where poets and mystics sold their wares alongside listings for carpools, roommates, and chess games.

Community Memory sprouted with unexpected uses: pseudonymous screeds, wacky come-ons, Grateful Dead quotes. It had its personalities. A guy calling himself Doc Benway, after a character in William Burroughs’s *Naked Lunch*, used the service as his own alternate-reality soapbox. Doc—A DAY TRIPPER IN THE SANDS OF THIS FECUND DATABASE—developed a cult following. Jude and others began to riff alongside him. Community Memory demonstrated, long before the Web, how networked computing can strengthen local bonds and create a culture of its own. By connecting people, bagels, and jokes, it presaged the quirks of online community by a decade. “We opened the door to

cyberspace and saw that it was hospitable territory," Lee proclaimed. For this, Community Memory has been amply celebrated. There's a terminal in the Computer History Museum, which also keeps Lee Felsenstein's papers, and several histories of the era cite Community Memory in glowing terms, as a "living metaphor," "a testament to the way computer technology could be used as guerrilla warfare for people *against* bureaucracies." To this, I tender two truths: it would have been impossible to execute if Pam Hardt-English hadn't brought the SDS-940, against all odds, into the hands of the counterculture.

And it's not why I've come to Mill Valley in the pouring rain.

### THE SOCIAL SERVICES REFERRAL DIRECTORY

Back at Sherry's, we move into the living room, a snug beige nook anchored by low couches. I perch on the footstool of an easy chair Sherry says would suit me, being tall. The tea goes cold as everybody settles in. Sherry makes me a plate. It feels unprofessional to eat, but she insisted on hosting, and she has gathered this group on my behalf, so I pick small fingerfuls of bell pepper and gluten-free rice cracker between questions. Their memories, she has promised, will be more reliable in tandem.

At Project One, her living space often served as the unofficial hangout for the group of women Sherry considered her closest friends in the warehouse commune. She'd make food for everyone, and they'd lie around on her waterbed and talk about the building's ceaseless romantic dramas, the power struggles in community meetings, and the revolution. They all gave part of themselves to the building, into the loving chaos of the collective dream they describe to me over tea. "When I was at Project One, I was never afraid," Pam tells the group, for my benefit. "I walked alone. Nothing ever bothered me. When I left, I felt like anybody could hurt me. I had no protection. I had never experienced fear before I left Project One."

Pam left the warehouse in 1975. She felt she'd done all she could do.

The SDS-940 was by then safely installed and established. The Community Memory terminal had been relocated to a store in downtown Berkeley, and the Mission Branch of the San Francisco public library had one, too. But it might have been more than just a sense of completion that led to her move out; as the de facto woman in the original Resource One group, "Pam found herself unwittingly cast into a 'queen bee' role, with others trying to unload their emotional work onto her," Lee Felsenstein tells me in an e-mail. "This may have been the major factor in her abruptly leaving the group—the burden of the accumulated desires of so many of us to act like our mother."

The rest of the women took up her baton. Mya, Sherry, and their friend Mary Janowitz, who had been working for a different Project One organization called Ecos ("The closest thing to a governing agency in the building," Sherry explains), pooled their resources to work together on a new project, one that would nudge the Resource One computer beyond community experiments and toward social good. None thought of themselves as techies. Mary had done some punch card data entry when she was a sociology student at Barnard, finding it crushingly boring, and Mya's technological passions extended only to video art. Unlike Pam, who came from the computer science department at Berkeley, none had studied programming. But they recognized that the computer was valuable, and that it could address some unmet needs in the community. All they needed was a problem to solve.

Later, as everyone exchanged pleasantries on the threshold, Chris would turn to me. "In the beginning, it was just the men," he'd say, warmly, zipping up his Barbour. "Hippies with their old ladies, flower girls. And then two years later, the women ruled everything." This change was partially due to the efforts of the women of Resource One—to Pam's fund-raising and project management, and to the problem the rest of the women tackled after she left.

They found the perfect application for Resource One's computer through an organizer who hung around the building, Charlie Bolton. Bolton told them how social services agencies in the Bay Area didn't share a citywide database for referral information; he'd personally ob-

served how social workers at different agencies relied on their own Rolodexes. The quality of referrals they gave varied throughout the city, and people weren't always connected to the services they needed, even if the services did exist. Chris Macie, who founded Resource One with Pam and stayed on after she left, programmed a new information retrieval system for the project, and the women started calling social workers all over San Francisco. If they kept an updated database of referral information, they asked, would the agencies be interested in subscribing? The answer was a resounding yes. The women of Resource One found their cause: using the computer to help the most disadvantaged people in the city gain access to services.

Their Social Services Referral Directory succeeded where efforts to interlink Bay Area Switchboards had failed, and for a simple reason: it actually considered its users. Social workers had no easier access to computer terminals or Teletype machines than the hippies running the Switchboards had, so the database was simply distributed on paper. For a nominal monthly fee, participating agencies received manila envelopes in the mail containing three-ring punched loose-leaf listings, organized alphabetically, to add to their own bright red Social Services Referral Directory binders. The central database itself was maintained on the SDS-940 by Mya, and later Mary, who entered the data Sherry gathered by calling local agencies. Each listing included essential information: languages spoken, service area, services provided. "We wanted the social workers to be able to do a better job," explains Sherry.

Joan Lefkowitz, a seventeen-year-old hippie kid with Janis Joplin hair and holes in the knees of her overalls, joined the group when Mya left, rounding out an all-female team. Joan had found her way to Project One after a stranger in a Santa Barbara health-food restaurant told her to knock on the warehouse window when she got to San Francisco and say "Jeremiah Skye sent you." She took the directory gig because it married her love of electronics with progressive action. Like Sherry, she spent her days on the phone: checking in on San Francisco's social workers, suicide-prevention hotlines, homeless shelters, senior centers, community groups, and Switchboards. "It really felt to me like putting

the tools to exactly what they were meant to be used for, to serve the needs of people," she tells me, a cat perched on her shoulder, when I reach her over Skype. "They figured out a way to put technology to use in a way that really touched people's lives, and that just seemed completely appropriate and cool."

To keep the directory accurate, the women made dozens of phone calls a day and collated pages by manually laying them on the floor in alphabetized piles. They all dreaded the monthly chore of going to the post office with hundreds of manila envelopes, each painstakingly hand labeled. As Joan puts it, the "women didn't do the programming themselves—we just did all the rest of the work." The directory was the most useful resource that social services agencies in San Francisco had ever seen. Every month, the packet of updated listings grew, until eventually the directory became Bay Area-wide, spanning two binders, each three inches thick. Every library in the city kept a copy, as did the Department of Social Services, in all its offices. When Sherry, Mary, and Mya eventually moved out of Project One and on to the next phases of their lives, they handed the directory to the United Way. It eventually made its way to the San Francisco Public Library, which put the database in its catalog and maintained it until 2009.

Although the Social Services Referral Directory has not been included in the prevailing mythologies about San Francisco as a place where hackers and hippies came together to create the future, it mattered in more practical ways. The directory connected an unseen and pointedly nontechnological segment of the population—social workers and families in need—until well into the twenty-first century. It's not clear that the hackers, misfits, and "magnificent men" about which Stewart Brand wrote so enthusiastically would have come up with, or actively maintained, anything quite like the Social Services Referral Directory, which was an unglamorous, drudgery-intensive community service. Since its interface was a three-ring binder rather than a Teletype terminal, its true nature as a digital object remained invisible to all but those who maintained it, although the database was printed out only for the benefit of those *without* "access to tools."

Today, in the former warehouse district South of Market, buildings are still full of young people, hard at work on their vision of tomorrow. They call it SoMa now. Nobody's bumming rides—these days, the cars drive themselves. Instead of one computer, its tonnage rivaling the rooftop boiler whose installation most Project One graduates remember with equal clarity, there are computers in every pocket and on every desk. There are light bulbs South of Market smarter than the Resource One computer. The brightest minds in computer science are still here—or the most privileged, anyway—but now they're refining algorithms to sell goods and services on a network their hippie forebears could only have imagined, long haired and pointing to the box (it's an electronic bulletin board, they said; it'll help us with the revolution, they said). Perhaps if the foundational myths of the city's technology culture, which so influences the rest of the world, included things like the Social Services Referral Directory, that revolution might have had a different flavor.

At their weekly building-wide consensus meetings, the women of Resource One were used to being talked over. Sherry and Mary remember a man who wanted to keep a gun in the building, and the drag-out debates with veto-wielding holdouts. "Making decisions by one hundred percent consensus with over a hundred people—some of whom were pretty wacky—it was tiring," Joan says. They came up with a solution. Every time one of them was interrupted, the others would interject. They worked out the strategy ahead of time, no doubt during some long conversation on Sherry's bed. "We would say, 'Wait a minute, I didn't hear what so-and-so said.' Or we would say, 'Wait, let her finish.' We would do that for each other," Sherry remembers. "You're countering dominance behavior. And sometimes all it takes to do that is to wake somebody up."

The Social Services Referral Directory represents one of the earliest efforts to apply computing to social good, and it reveals what happens when the process of technological design and implementation is opened up to more diverse groups of people. When the women of Resource One—radicals, feminists, and organizers all—brought their shared values

to the machine, the result was a product more beneficial to their community. They took the tools being touted as world changing by male hackers and applied them locally, making them do good in the here and now. It remains a radical idea, and it wasn't the first time that women brought such a strong concern for use to technology: pioneers like Grace Hopper and Betty Holberton, working to refine and systematize programming languages, made their craft accessible to a broader public, opening doors for even nonprogrammers to understand what computers make possible. And it would soon happen again—and again, and again—as the interconnection of computers gave women new openings to pioneer emerging fields. In the process, they'd help us all to make sense of the information age.