Chapter Four

Cyborganic as Network of Innovation: A History of the Project

Described by *Rolling Stone* magazine as "a community of webheads who live

in and around an apartment on Ramona Street on the outskirts of [San Francisco's]…

Multimedia Gulch" (Goodell 1995); and by *Wired News* as "an influential early Web

community" (Boutin 2002) Cyborganic was a group of households, neighborhood

cooperative, professional network, artist organization, social clique, and business

start-up whose members met and interacted online and face-to-face. Cyborganic was

both the project to create this multifaceted online and offline community as well as

the community that came together in that project.

Started in the early 1990s in an apartment in San Francisco's Mission

Dolores neighborhood, Cyborganic grew at its height (1995-1997) to encompass a

community 100-150 people,[1] approximately 65 percent men, 35 percent women.

Members were for the most part in their twenties, white, college educated,

countercultural in taste, and practitioners, both amateur and professional, of

technologically-intensive arts. Almost all were born and raised in the United States,

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[1] It depends on what counts as membership. This range is estimated from: (a) total
cumulative number of user accounts on the Cyborganic server (143, some people had
multiple accounts, some accounts did not map to people); (b) maximum number of
people with homepages on the Cyborganic website at one time (86); and (c) the
maximum number of simultaneous mailing list subscribers (152).

though most were not from the Bay Area, but had moved there for college, graduate studies, or to pursue careers.

Cyborganic's central premise was that online and face-to-face interaction are mutually sustaining and can be used together to build uniquely robust communities. The project was to use computer-mediated communication, not to transcend geographical place, but to build a local, networked community. Those who led the project wanted to create such a community in their own lives. But they also wanted to demonstrate the possibilities of using technology in this way out of a sense that others, too, would benefit from Cyborganic's example and its project to spread the gospel of networked, local community. The project was pursued as a business start-up and though that enterprise provided the impetus and framework (both technical and imaginative) for the community, the two were symbiotic aspects of a whole that can only be understood holistically and within the context of the Web industry that emerged in San Francisco in the 1990s.

Founded and led by Jonathan Steuer, Cyborganic was a project to create an Internet business based on hosting local communities on the model of the WELL, and in the spirit of the "exemplary communities" of Turner's New Communalists. Steuer's plan was to demonstrate the value of combining face-to-face and online sociality by starting the type of community he envisioned among his own friends, in his own neighborhood. The idea was to bootstrap the project with personal resources and volunteers to create an example that could be used to raise venture capital for the business. Charismatic and ardent about the social possibilities of networked media,

Steuer initiated the project with his own resources; and recruited collaborators, who also contributed on a voluntary basis, to the cause of building this local community. Their efforts were successful and the community that came together in Cyborganic's face-to-face and online venues took on a life of its own, symbiotic with but distinct from, the project to launch the business. This community became a hub of San Francisco's burgeoning Web industry in the mid-1990s. Several Cyborganics, including Steuer, played leading roles in the development of Web publishing (Reid, 1997), and group members served as the creative and technical workforce that launched many early Web ventures.

Writing for *Wired News*, Paul Boutin highlighted Cyborganic's role as a Web industry hub in an article about the group's weekly Thursday Night Dinners (TND). He noted that dinner regulars included "a bevy of early Web luminaries," such as Apache co-developer Brian Behlendorf and proto-blogger Justin Hall—"two who helped shift the Web from a collection of academic papers to a personal publishing medium and affordable e-commerce tool" (Boutin 2002). In the mid-1990s Cyborganic's TND "was the place to be for San Francisco's up-and-coming Web workers," as Boutin describes.

> TND's weekly self-catered theme parties, which ran from 1994 to 1997, were more potluck than potlatch compared to the high-rolling dot-com events that drowned them out in the late 1990s. Yet the average Thursday Night Dinner boasted a higher density of people like Hall and Behlendorf who, rather than counting stock options, were spending long hours creating everything from serial online soaps to the first online ads to open-source software. (Boutin 2002)

In contrasting Cyborganic's "true believers" with "the frauds and wannabe's [who] infested San Francisco with dreams of dot-com riches," Boutin captures the group's significance, not as a business, but as a milieu of creative and communitarian innovation. Understanding Cyborganic and its wider relevance requires recognizing the inseparability, not only of its online and offline dimensions, but of its entrepreneurial and communitarian ones as well. Moreover, it requires understanding the role Cyborganic and its members played in the network of businesses and communities that were central to the development of Web publishing in San Francisco in the 1990s. The history presented in this chapter works to show these connections as it chronicles Cyborganic's evolution within this milieu.

Preamble to the History

This history traces the Cyborganic project from its conception in the early 1990s through the closure of the business enterprise in 1997. Though it describes Cyborganic's growth as a local community, and long gestation as a business start-up, it is really the history of the network that came together through and around Cyborganic. For this reason, I call it a network history. As such, it is an account of the individuals and collaborations linking firms, projects, and communities in San Francisco's Web industry in the mid-1990s. Figure 4.1 below (and Appendix D), diagrams this network, highlighting Cyborganic's central role, and noting key people, events, and connections described in the account.
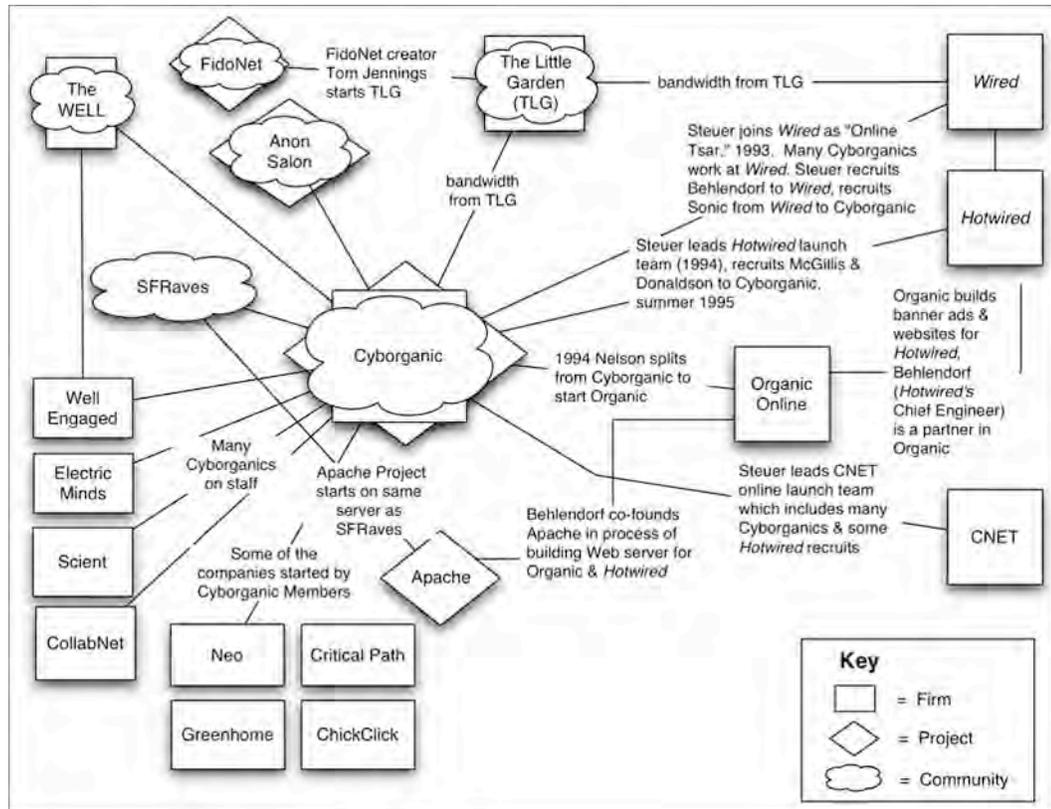
Figure 4.1: Cyborganic network of firms, projects, & communities (1993-1999)

This history includes many proper nouns: names of interconnected people, projects, and companies. Figure 4.1 above and Table 4.1 below are intended to orient the reader to the entities involved and the key individuals through whom they are linked. Though a few lines of connection in Figure 4.1 represent Internet service, all the lines represent flows of people, ideas, and collaborative action. As is the case for most histories, most of these people will go unnamed, but Table 4.1 below identifies those who are central to the narrative connecting the communities, firms, and projects in this network history.

Table 4.1 Names and roles of people listed in Figure 4.1

Jonathan Steuer	Cyborganic Founder Online Tsar for *Wired* magazine *Hotwired* and CNET online launch team lead
Jonathan Nelson	Co-founder, Organic Online, a Web production company
Brian Behlendorf	Co-developer of the Apache Web Server Co-founder, Organic Online Leader in the open source software movement
Ann Hess	Hess, Donaldson, and McGillis—together with Steuer and
Caleb Donaldson	Cool (the author)—were the principals in the Cyborganic
Tricia McGillis	business start-up that incorporated in 1995.
Tom Jennings	Creator of FidoNet, first message and file networking system for computer bulletin board systems (BBSes). Founder of The Little Garden (TLG), the group that provided Internet service (bandwidth) to Cyborganic, *Wired*, and *Hotwired*.
Howard Rheingold	Author of *The Virtual Community* (1994) about the WELL Consulting Editor for *Hotwired* Founder, Electric Minds

As noted in chapter 2, the group history elicited from Cyborganic members in the course of our 1996 IFTF study was made into a graphical timeline. This timeline, reproduced in Figure 4.2 below (and Appendix C), has guided my account of Cyborganic's evolution. It provides, at a glance, a sense of the places, themes, and sequence of events described in the history. The milestone events it depicts are listed in Table 4.2 below.
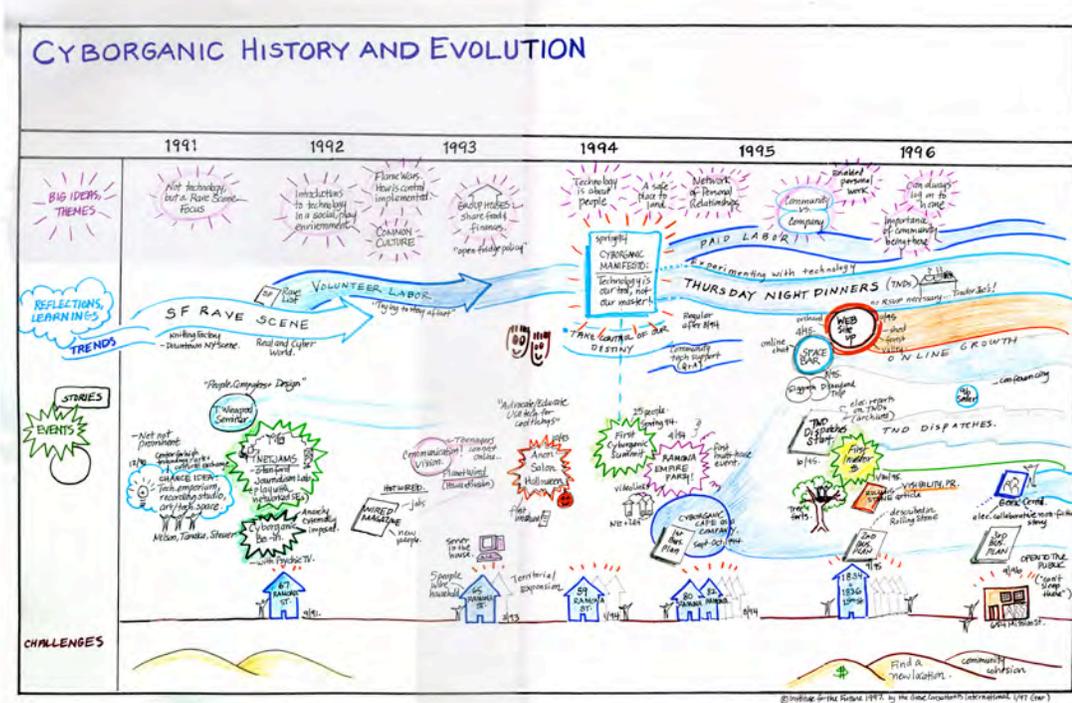
Figure 4.2: Cyborganic history and evolution (1991-1996)
Illustration courtesy of The Institute for the Future

Table 4.2 Cyborganic milestones shown in Figure 4.2

Fall 1990	CHANCE prospectus, business plan for combined technology emporium, recording studio, and art/performance space
Sept. 1991	67 Ramona Avenue becomes the first Cyborganic outpost on the street when Steuer, Clerici, and Eccles move in.
Mar. 1993	65 Ramona Avenue becomes Cyborganic territory when roommates Bahcall and Seaman move in downstairs.
Oct. 1993	*Cyborganic.com* domain registered and hosted on the server at 65/67 Ramona. The Cyborganic Café project debuts at Anon Salon
Fall 1993	Steuer goes to work at *Wired* magazine. Ramona residents start using e-mail to coordinate group dinners and household business
Jan. 1994	59 Ramona is incorporated into Cyborganic when Potter, Cheney, and Cool (the author) move in next door to 65/67.
Feb. 1994	First Cyborganic Summit of volunteers to organize the project. Cyborganic Manifesto published online
Apr. 1994	Ramona Empire "You Will Be Assimilated" Party
Aug. 1994	80-82 Ramona Avenue added to Ramona Empire as Hess, Francis, and Drukman move in across the street.
Fall 1994	Thursday Night Dinners (TND) become a regular weekly event.
Apr. 1995	Cyborganic Gardens 1.0, Cyborganic's first website, goes online. Space bar chat goes online.
Aug. 1995	1834-1836 15th Street (on corner on Ramona) added as Cyborganic community members move in and join Ramona LAN.
Aug. 1995	Cyborganic road trip to SIGGRAPH and Disneyland
Sept. 1995	Thursday Night Dinners (TND) dispatches reporting on the weekly dinners start on the Web.
Oct. 1995	Cyborganic Gardens 2.0, newly designed and expanded website launches. First Cyborganic business plan presented to an investor.
Nov. 1995	First investment money. *Rolling Stone* feature article about Cyborganic published
Sept. 1996	654 Mission Street: Cyborganic business offices move downtown to San Francisco's South of Market (SOMA) area.
Fall 1996	*Geek Cereal* launches

A Network History of the Cyborganic Project

The concept for Cyborganic can be traced back to November 1990 when Jonathan Steuer, Atau Tanaka, and Jonathan Nelson put together a business plan for CHANCE: Center for High Technology, Arts, and Cultural Exchange. The plan was to incorporate two for-profit businesses, a nightclub and a recording studio, alongside a non-profit gallery and performance space for technology-intensive arts. Though the business plan was never funded, it serves as a milestone because all the key aspects of Cyborganic's concept (except the Internet) were already present. These include the centrality of a physical location for informal sociality, the combination of art and technology, profit and non-profit, the synergy of enterprises, and connection to the local San Francisco arts community.

Steuer was a doctoral student in Communication at Stanford University at the time and it was in this context that he took a seminar from Terry Winograd, who has done important work in collaborative computing and human computer interaction. This seminar in the fall of 1991 marks the next milestone in the Cyborganic story because it was there that Steuer met Abbe Don, an interface designer then working at Apple's Advanced Technology Group (ATG). Don introduced Steuer to her colleagues at Apple, including Tim Oren, a Silicon Valley veteran who began his career at Digital Research and left the company with its founder, Gary Kildall, to start KnowledgeSet. Oren was then managing "Apple's first ventures into multimedia and led R&D on hypertext and full text databases, multimedia agents, collaborative

systems, and online communities."[2] Through Don, Steuer also met Howard

Rheingold and other members of the WELL, the group profiled in Rheingold's book

The Virtual Community (1993), which served as one inspiration for Cyborganic's

combination of commercial and communal practices. In the summer of 1992 Steuer

interned at Apple ATG and was assigned the task of surveying and reporting on

Internet services and online communities. He returned to Stanford that fall with

thoughts of integrating ideas from the CHANCE business prospectus with the new

possibilities of the Internet. During the school year (1992-93) Steuer organized a

series of events called "Net Jams" at the Stanford Journalism Lab, where

> a group of people would gather in the same physical location. Using
> the Internet, the group would then reach out to various other places. I
> [Steuer] invited a group of friends, some with much net experience
> and some with none at all, to meet in the Journalism Lab at Stanford
> one Saturday afternoon in October. (Steuer 1993)

This combination of face-to-face and online interaction, of sociality and technology,

of experienced users with neophytes, and organization through "groups of friends,"

were important aspects of Cyborganic prefigured in the Net Jams.

The Internet was not only an academic focus for Steuer, but more and more a

feature of social and cultural life. In the early 1990s San Francisco was home to a

vibrant and growing techno-culture. In addition to a thriving "rave scene" (all-night

techno-music parties), the City regularly hosted computer-inspired cultural events

such as Cyberthon (sponsored by the *Whole Earth Review*), the Digital Be-In, and

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[2] Institute for the Future, "People: Tim Oren," http://www.iftf.org/people/toren.html, accessed April 11, 2008; page now discontinued.

the Hackers' Conference. At regular community venues, such as the monthly Anon Salons and Joe's Digital Diner, new media artists showcased their work at party-style events with music and socializing. In September 1991 Steuer moved into the apartment on Ramona Avenue around which Cyborganic grew, with software engineers Gianmaria Clerici and Chris Eccles.

In March 1992 Brian Behlendorf, a UC Berkeley freshman, set up a mailing list called SFRaves to make it easier to find out about local rave parties. Within a week, SFRaves had 80 subscribers, within a year, 500. The roommates on Ramona were among the first to join. As it formed this subculture within the broader rave scene came to be knows as "Netravers." In the spring of 1993, Eccles moved out of the apartment on Ramona Avenue and Anne Francis moved in. Together, Steuer, Clerici, and Francis formed a very close-knit household, and their apartment became a meeting point where "Netravers" ate dinner and gathered before heading out to parties. In early 1993, Nelson, one of the partners in CHANCE, introduced Steuer to Will Kreth who worked at *Wired*, a new magazine that was just starting up in San Francisco's South of Market district (SOMA). That summer Steuer convinced *Wired* founders, Louis Rosetto and Jane Metcalf, to hire him to wire *Wired*. Literally, his first task was to get the magazine's connection to their Internet service provider, the Little Garden (TLG), working reliably and integrated with the company's electronic mail software (QuickMail). *Wired* employees soon became regulars at the gatherings on Ramona Avenue. The first version of the Mosaic Web browser had been released in the spring of 1993 and by the end of the year interest and activity around the

Internet was intense in San Francisco. In the wake of more than a decade of urban redevelopment, SOMA was fast transforming into a hub of the emerging Web publishing and advertising industries. In this milieu Steuer once again began talking about "doing a start-up" like CHANCE but built around the Internet. He had just been named "Online Tsar" at *Wired* and was leading the effort to take the publication online. Though still tied to his "day job" and writing his dissertation, Steuer began talking to friends about collaborating on Cyborganic.

Work on the Cyborganic business got under way in autumn of 1993 after I accepted Steuer's invitation to join the project and moved to the Bay Area. In October, Steuer turned the downstairs kitchen at 65 Ramona into a server room, registered the *Cyborganic.com* domain, and set it up as Cyborganic's first Internet server on *ramona.cyborganic.com,* a 386 computer running BSD/OS (a Unix-like operating system for personal computers). He added a phone line, then used a modem to dial-in to the Little Garden (TLG) and stayed connected continuously. "Pac Bell never said you couldn't do that," he quipped in a 2004 interview. At the same time, I began writing the first proposal for the business venture and produced a brochure intended as an overview for potential investors and collaborators alike. Printed on iridescent green, legal-size paper and crowded with text on both sides, this brochure (Appendix E) described The Cyborganic Café as:

> a physical café and virtual café all in one [that]…combines the
> features of a neighborhood coffee house with those of an online
> service, community newspaper, and multimedia service center.
> (Cyborganic brochure, October 29, 1993)

On October 29, a prototype of the Cyborganic Café debuted at the Halloween Anon

Salon. This prototype consisted of a few terminals on tables where Steuer and I

demonstrated the wonders of applications such as Gopher, Veronica, and Mosaic,

and explained the possibilities of the Internet to anyone who stopped by. Later that

night, at Terrence McKenna's show at San Francisco's Great American Music Hall,

Steuer invited Behlendorf, who started SFRaves, to join him at *Wired*. Behlendorf,

who has since become a leader in the open-source software movement through his

work on the Apache server, was nineteen when he joined Steuer in building *Wired's*

online infrastructure.

During this period, Steuer, Nelson, Behlendorf, and I met at the Ramona

apartment to talk about the Cyborganic project. However, as business interest in the

Internet continued to grow, Nelson's interest shifted from communal opportunities to

commercial ones. He split from Cyborganic in mid-1994 to start a Web production

and advertising firm, Organic Online, with his younger brother, Mathew Nelson;

Cliff Skolnick; Leslie Rossman; and Behlendorf as partners. Nelson became

Organic's CEO; Behlendorf, who to continued to work at *Wired*, became CTO; and

Skolnick, who also kept his day job (at Sun Microsystems), became the company's

CIO[3]. Dan Haig, Organic's first employee, and Halley Silver—who together

comprised Organic's Web production staff for the firm's first year—were also

members of the Cyborganic community. Haig, along with his brother John, had

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[3] CEO, Chief Executive Officer; CTO, Chief Technology Officer; CIO, Chief
Information Officer.

grown up with Steuer and the Nelson brothers in Milwaukee, Wisconsin, and all had gone to the same high school. Both Haigs started working for Organic in its start-up phase. Like Cyborganic, Organic was a bootstrap venture. The *Organic.com* domain was initially hosted on Cyborganic's servers; and the firm operated out of the elder Nelson's San Francisco apartment for almost a year before moving into offices in the same building that housed *Wired* and *Hotwired* on South Park in SOMA.

The firm's connections to *Hotwired's* sales staff served as its initial conduit to the emerging market for Web advertising and Organic Online built many of the first corporate websites for clients such as Reebok, DaimlerChrysler, Yahoo!, Blockbuster, and Fannie Mae. As the Internet industry grew, so too did Organic, and the company went public in 1999 with backing from Omnicom Group, a giant holding company that also invested in Razorfish and other interactive media agencies. By 2000 the firm had grown to eight offices and 954 employees worldwide, with gross revenues of 129 million. It was re-privatized in December 2001 and acquired shortly thereafter as a wholly owned subsidiary of Omnicom Group. But these events were not quite yet imaginable in the early days of 1994 when Nelson and Behlendorf split off from the Cyborganic project to pursue their own start-up in Organic Online.

In February 1994, I moved into the apartment next to Steuer on Ramona Avenue and helped him organize the first Cyborganic Summit where 33 people came together to brainstorm on the project. In response to Steuer's request for a mission statement to put online for the event, I drafted the Cyborganic Manifesto, a

meditation on technology and human ends that can be summarized: "Technology is our tool, not our master." On April 16, 1994, the housemates of the Ramona Empire hosted the first multi-house event, a rave-style party called "You Will Be Assimilated". Billed as "A happening in three dimensions," the invitation instructed guests to "Telnet to cyborganic.com & login as rsvp." This was an important milestone in the history of Cyborganic and marked the group's debut to the wider community of computer geeks, ravers, artists, and entrepreneurs coming together in San Francisco at the time.

In the spring of 1994 I also began hosting Thursday Night Dinners (TNDs), irregularly until October and weekly thereafter. TND was a face-to-face gathering that became the backbone of the Cyborganic project. Over the next three years these dinners and the Cyborganic mailing lists were central to the community's formation. TND grew to be a pot-luck dinner hosted at Cyborganic's offices, supplied and staffed each week by community volunteers: "Guest Chefs," who selected a theme and provided main dishes; a "Swab Master," who led the clean-up, and a "Guest DJ," who handled the music. Groups of co-workers from local Internet firms would often volunteer together to put on a TND. These dinners became a hub of the industry growing around the popularization and commercialization of the World Wide Web.

Shortly after the launch of *Hotwired* in October 1994, Steuer left to consult for CNET, a media venture founded in San Francisco the previous year by Halsey Minor and Shelby Bonnie. Their vision for CNET was to combine television and online programming synergistically. Amy Critchett, a co-worker of Steuer's at

Wired, had interviewed at CNET and though the task of advising them on their Internet plans was not for her, she recommended Steuer for the job. Steuer helped CNET implement an Internet strategy that positioned them to: (1) create several commercially successful Web portals in rapid succession (Shareware.com, Download.com, and Movies.com); and (2) to commercialize the publishing software created to build these websites. Steuer hired Michael Gold from the *Hotwired* launch team to design a publishing system for CNET. A team of software developers from Bellcore was brought in to build it, with Gold and Steuer acting as liaisons between them and the CNET staff who would use the software in their daily work. The publishing system Gold designed eventually became Vignette StoryServer.

In 1996, CNET commercialized this software that made it possible for people without technical knowledge to publish Web pages. They partnered with Texas-based Vignette Corporation, turning the software over to them, along with $500,000 in return for a 33 percent stake in the company. An early entrant in to the Web content management market, Vignette StoryServer was instrumental in helping, first publishing companies (e.g. Chicago Tribune and CBS Sportsline), then corporations of all kinds, integrate their core business around new network technologies. Steuer also hired the Web production team that launched the CNET website, bringing Caleb Donaldson from *Hotwired* and Dan Haig from Organic Online. Steuer and Gold, with help from Donaldson, designed CNET's posting area, developed the site architecture, hired and managed the ten person Web production staff through the site relaunch in the spring of 1995. Everyone on the online production team was a

member of the Cyborganic community (e.g. Gold, Donaldson, Francis, M. Mara-Ann, Charlie Fulton).

Throughout the period Steuer worked at CNET, both the Cyborganic project and community on which it drew continued to grow. In August the Ramona neighborhood expanded to encompass five apartments (12 people, 15 computers) when Francis, who had lived with Steuer at 65 Ramona, moved in to an apartment across the street with her fiancé, Jon Drukman; and Ann Hess moved in to the apartment below them. Drukman, who contributed for more than a decade as one of Cyborganic's volunteer systems administrators, met Francis and Steuer through the SFRaves community. Hess, who had been working at San Francisco's Exploratorium science museum, met Steuer when she came to work at *Wired* as assistant to the magazine's co-founder, Jane Metcalf. Cyborganic's first business plan was drafted in 1994 and about half the people who had been part of the first Cyborganic summit continued to work in small groups implementing various aspects of the plan.

In 1995 Steuer started taking website production jobs for Cyborganic alongside his part-time consulting work at CNET to earn revenue for the business. Hess handled production and client contact for these jobs on a contract basis. In March, I joined the business, which was then a sole proprietorship owned by Steuer, as a full-time contractor. My job was to set-up administrative and member support systems, while continuing to host TND, which was now brought explicitly into the business venture from the community side of the project. Steuer worked for publishing and media companies, channeling his consulting fees into funding the

fledgling start-up and his energies into recruiting a production team to build Cyborganic's Web presence.

Meanwhile, Behlendorf was working to build the network infrastructure and systems for both *Hotwired* and Organic Online, the company he had partnered in with Nelson. When Behlendorf found that the server software he was using—the public domain HTTP daemon developed at the National Center for Supercomputing Applications (NCSA)—could not handle the user registration system *Hotwired* required, he began patching the open source code to support the requirements. During this period, Internet growth was exponential and challenged even the steady stream of new technologies being created. Many webmasters began to "develop their own extensions and bug fixes that were in need of a common distribution."[4] Behlendorf was one of these webmasters and in February 1994, with seven others, he formed the original Apache Group, which he hosted on his own server on bandwidth donated by *Hotwired*.

> The PC, a Pentium 90, went under his desk at Wired, was hooked up to their LAN and was given a public IP address. [Behlendorf] chose a domain name for it in honor one of his favorite techno tracks at the time: "hyperreal" by the shamen…the machine name, taz, was a reference to Hakim Bey's entry on every cyberpunk's essential reading list: "T.A.Z. - the Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism. (Brown, 2000)

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[4] The source of this quotation and other historical details of the Apache project: Apache HTTP Server Project, "How Apache Came to Be," http://httpd.apache.org/ABOUT_APACHE.html, accessed September 1, 2008.

Behlendorf and Skolnick started the Apache mailing list on this server, sharing

information space and logins with the core developers collaborating on a set of

software patches for the NCSA Web server. Apache's first public release (0.6.2)

came in April 1995 and was a big hit with the rapidly growing community of Internet

systems administrators. Less than a year after the group formed, the Apache server

passed NCSA's HTTPD to become the most used server on the Internet, a position it

retains today.[5]

The period during which Apache grew to be the most highly used Web server

was one of tremendous growth and activity around the Internet in general and in San

Francisco's SOMA district in particular. By 1995 the Internet and dot-com boom

were mainstream, international news, though e-mail, Web hosting, and home

connectivity were not yet the consumer commodities they are today. Steuer decided

it was a good time to make another push to raise venture capital for his plan for a

community-based Internet business. He felt the first step was to redesign

Cyborganic's Web presence and, as part of this effort, recruited Donaldson and

Tricia McGillis to work on the Cyborganic start-up. One of the original designers at

Wired, McGillis was working as Art Director for Berkeley-based Yoga Journal.

Donaldson, who had been on the *Hotwired* launch team, was then working at CNET.

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[5] According to a Netcraft survey of Web server software on Internet connected
computers, in July 2008 Apache had a 49.49 percent market share of active sites
against 35.57 percent running Microsoft, and 5.7 percent running Google server
products. (Netcraft, http://news.netcraft.com/archives/web_server_survey.html,
accessed September 1, 2008.)

McGillis and Donaldson, who are now married, both moved to the Bay Area around 1991 after graduating from Yale. When Steuer started talking to them about joining the Cyborganic start-up in early 1995, they welcomed the opportunity to work on a project together and with friends, as they were also members of the "Netrave" community. Though both remained at their day jobs, the two worked together with Hess to build the company's first website. In April 1995 Cyborganic Gardens 1.0 went online with 34 member homepages, including those of Howard Rheingold and proto-blogger Justin Hall. "Almost no one involved in the project was paid, nor was anyone making any money from it. Through the summer of 1995, the Cyborganic Café project gained momentum and by the end of the year it had its first investor" (IFTF 1997a:32).

The second half of 1995 was the most active period in the history of Cyborganic. In the summer, McGillis and Donaldson left their other jobs to work full-time on the project of turning Cyborganic into an Internet start-up. With the help of Wilson, Sonsini, Goodrich, and Rosati—a Silicon Valley law firm that had just begun offering services on credit to Internet start-up companies—the business was incorporated as The Cyborganic Corporation. Steuer, Hess, McGillis, Donaldson, and I became principals in the firm, the four of us reporting to Steuer in a flat, hierarchical structure. The team of Hess (Production Director), McGillis (Design Director) and Donaldson (Editorial Director) got to work re-designing and enhancing the Cyborganic Gardens website. Steuer and I continued shopping the Cyborganic business plan to prospective investors, finally securing an initial round of financing

in October 1995. That month, the redesigned Cyborganic Gardens website went online. The community and media attention Cyborganic received began to grow more rapidly after *Rolling Stone* published a feature article on the group, titled "Webheads on Ramona Street," in November 1995. In the wake this coverage, attendance at the weekly dinners (TND) swelled to well over a hundred, straining the capacity of the apartments that housed Cyborganic's offices.

As Cyborganic entered this period that turned out to be the height of its success, it began to change and tensions between its communal and corporate dimensions became more pronounced. With Cyborganic's incorporation, relationships that had been informal and voluntary were formalized in job descriptions, reporting structures, and legal contracts. While this was a practical necessity, it also involved ceding to the Corporation claims on intellectual property created in a community context on a volunteer basis, signing non-disclosure agreements, and apportioning stock options. I felt a growing conflict between my goals as an Internet community researcher and the goals of Cyborganic's business project and left the company in January 1996, though I remained a member of the community.

In early 1996, The Cyborganic Corporation began a concerted effort to sign new people up as paying members—basic membership of $10 per month included website hosting and two POP e-mail addresses. In addition, there was a move to convert free accounts of community members who were not actively contributing to

the project to a fee basis. This effort was documented in TND Dispatches and "The

Cyborganic Propaganda," as the leaflets distributed at TND were called.

> If you enjoy the whole Thursday Night Dinner/Cyborganic scene,
> why would you have your home page anywhere else?" (The
> Cyborganic Propaganda, March 23, 1996)

> Join Cyborganic! If you haven't already now's the time to move your
> email and home page to the Gardens. It'll cost most people just ten
> bucks a month. (The Cyborganic Propaganda, May 9, 1996)

The campaign was part of the effort to attract investors by demonstrating that

Cyborganic had revenues and paying customers. Money was tight and the principals

in the company were not drawing salary, though other employees were being paid.

To generate revenue, Cyborganic took on contract work and added to its staff by

hiring from the community.

> Cyborganic welcomes yet another full-time worker to the fold. Jon
> Drukman had been handling our UNIX servers for ages now, and we
> finally coaxed him out of his "real" job at Opcode. A full-time geek
> on staff means we're busy building more member tools for the
> Gardens. Stay tuned. And we're looking for a few more humans,
> notably one with ad sales experience on the Internet, and one to do
> contract SQL programming. (The Cyborganic Propaganda, April 18,
> 1996)

These announcements show the growth and formalization of Cyborganic as a

commercial enterprise during this phase of its development.

As Cyborganic's staff took on commercial projects to generate revenue,

Steuer and a series of collaborators revised the business plan and continued to hunt

for investors. In July 1996, "Cyborganic's Web-mercenary squad" was engaged to

work as "Online Masterminds" on the first annual Global Internet Gathering (The

GIG). Billed as "world's largest music festival," The GIG incorporated smaller festivals, such as The Macintosh New York Music Festival and the Montreaux Jazz Festival. It featured live performances broadcast over the Web, as well as "interactive and dynamic elements ranging from chat and bulletin boards to agent software" (Cyborganic brochure, 1996). In addition to developing the graphics and interface for the website, Cyborganic designed and implemented the network architecture to connect more than 40 venues and support the website during the Festival. In September, the group launched two Internet publishing projects, *Geek Cereal*[6] and *The Couch*, Web soap operas consisting of the online diary entries of "real geeks." These were part of the plan to combine the bottom-up publishing model of the Web with an advertising revenue model.

After closing a new round of investment late in the summer of 1996, Cyborganic moved its offices, along with TNDs, from the house on Ramona to a large, commercial, office space in the heart of San Francisco's SOMA district (654 Mission Street). The location included: a top-floor, where the Cyborganic offices were set up in the unpartitioned, sparsely furnished style typical of technology start-ups; a ground level, mostly empty, which was to become the Cyborganic Café; and a unimproved brick basement. TNDs resumed at this new location and became something of a media event, colorful fodder for growing mainstream interest in the Internet and Internet geeks.

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[6]Geek Ceral is now archived at Rocky Mullin's website, http://sharon.net/gc/, accessed August 9, 2008

Though the downtown location lent credibility to Cyborganic's business project and visibility to the community, it had downsides. The new place lacked the homey feel of the apartments on Ramona where, as one informant put it, "the grub and drinks were good (and usually home-cooked) and creative."[7] There was no kitchen and this changed the character of TND as packaged and take-out foods replaced the potluck dinners that had been cooked communally onsite. In addition, the new space brought other changes, as these interview excerpts indicate:

> the new space is.... interesting, but it's....very different and I kind of liked the sort of small spaces, homeyness of where it was before…for one thing, I'm not even sure whether you're allowed to use the computers in the attic, it's, it's so segregated from the bottom that I have the impression that you're not supposed to go up there and use them… And again the breaking up into smaller rooms made groups smaller, whereas like this time, there was half the room with people who all knew each other all sitting on the floor, well, it's kinda exclusive in a sense, if you don't know anybody who's sitting there, you can't just go over and sit down. At least I didn't feel I could. (Laurie Hunt [pseudonym], interviewed October 7, 1996)

> TND can get really cliquey and it's difficult sometimes for new people to feel like they're a part of the community…I think it's partially due to the schmoozing that does go on, people are a little leery, sometimes people are a little leery of welcoming people with open arms… There's a small level of distrust like people want to get to know people a little bit first to make sure they're not just some fucking guy who's trying to get connections to get in to whatever place…that kind of stuff. (Kat Kovacs, interviewed October 8, 1996)

Though attendance at TNDs had grown, community participation in volunteering to cook and clean at the weekly dinners waned significantly after the move and in conjunction with the shift to fee-based membership. Dinners were only held

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[7] Susie Kameny, e-mail survey response, October 5, 2005.

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regularly for a month at the new location, and irregularly thereafter, the last TND dispatch in the archive is dated October 31, 1996.

In addition to new offices, Cyborganic's new round of funding made it possible to pay people, both principals and employees, who had been working without pay for months in exchange for stock options, in some cases. However, the investment was not enough to realize Cyborganic's plans to open a physical counterpart to its online venues and, by the time the funding round closed, the money had nearly run out. Moreover, Cyborganic's principals did not share a vision of how to proceed and McGillis and Hess took the occasion of the funding, and payment of salaries in arrears, to make their exit from the business, but remained members of the community. This left only two (Steuer and Donaldson) of the five partners with which Cyborganic had incorporated approximately 16 months earlier and marks the beginning of Cyborganic's demise.

For about a year Steuer continued to seek investors for the business, while Donaldson led on the editorial side as Gardener-in-chief of Cyborganic's website and Executive Producer of *Geek Cereal*. After a year in which a few investors showed serious interest, but none actually produced a check, the cash flow required to operate at the new location proved unsustainable. In October 1997, Steuer and Donaldson parted company after talks about "letting the Geeks take over their Cereal…fizzled out."[8] Cyborganic moved out of the downtown offices and the

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[8] Caleb Donaldson, "Geek Cereal," October 24, 1997, http://www.sharon.net/gc/today.html, accessed September 3, 2008.

Corporation declared bankruptcy. Over the next six months, user accounts and content were migrated smoothly off the company's servers and most members found new homes in communities similar to Cyborganic in spirit and structure, but without the formal business project and dedicated physical space. The Ramona neighborhood continued to be occupied by community members who shared connectivity, technical infrastructure, and administrative labor through the LAN. These off shoots and legacies will be discussed in the next chapter as I have chosen to end this historical account in the winter of 1997 with the cessation of weekly dinners, the close of the business, and the migration of user accounts that followed.

Themes of the Network History

A number of themes, or arguments, pertinent to the objectives of this dissertation come across in this history. Three I see as most significant are: Cyborganic's strong connections to an earlier generation of Bay Area telecommunities, such as the WELL; its role as a milieu and network of innovation; and the tensions between the group's entrepreneurial and communitarian imaginaries. Analysis in this chapter will focus on the first two of these, leaving the third for subsequent chapters.

The first theme I wish to highlight from this history is Cyborganic's situatedness in the regional and cultural history presented in chapter 3. Stated as argument, my contention is that despite the innovations it embodied, Cyborganic emerged in a specific time and place deeply tied to wider structural and cultural

forces in U.S. and global history. These ties are evident in the network history and demonstrate quite clearly the four cultural layers Castells has identified as constituent of Internet culture: the techno-meritocratic, hacker, virtual communitarian, and entrepreneurial (2001:37).

The second theme I wish to highlight is the milieu of innovation argument, namely, that Cyborganic is exemplary of the regional and cultural advantage of "technopoles" (Castells and Hall 1994:8), and was a precursor to many contemporary phenomena of online social networking. I draw on this network history, and supplementary ethnographic material, to demonstrate Cyborganic's productive capacities and specific innovations. In short, I address the question of how Cyborganic was innovative, how the group and its members contributed to the development of Web publishing and the rise of San Francisco's SOMA district as an Internet industry hub in the 1990s. Building on the argument of the first theme, I contend that Cyborganic drew on all strands of the four-layer Internet culture to create new productive relationships that were integral to those broader developments.

Theme 1: Cyborganic's Situatedness in Bay Area Internet Culture

Cyborganic's strong connections to an earlier generation of Bay Area telecommunities—and the techno-meritocratic, hacker, virtual communitarian, and entrepreneurial cultures of the creators of the Internet—can be seen at several points in the network history. Most immediate are the links between Cyborganic and the WELL, the Bay Area online community at the center of Rheingold's *The Virtual*

Community (1994) and Turner's argument about the New Communalists (2005, 2006). As discussed in chapter 3, Turner analyzes the WELL as an exemplary community that translated the counter-cultural vision of the *Whole Earth Catalog* to the cyberculture of the network economy. As such, the WELL community can be seen as an ancestor of Cyborganic. In addition to a small but significant overlap of members who belonged to both communities, the Cyborganic project also drew on WELL practices and policies to shape its own vision of a community connected both online and offline "in real life" (IRL).

Steuer and a few of the older Cyborganics—i.e. those who were in their late, rather than early, twenties—were WELL members and several prominent denizens of the WELL, including Rheingold, were mentors and members of Cyborganic. While the WELL's membership was, on the whole, a generation or so older than Cyborganic's, it included people such as *Wired* magazine's founding editors (Rosetto, Kevin Kelly); and was, as Turner describes, a "network forum" connecting disparate communities. One of my earliest fieldnotes, from September 1993, captures these connections. It records the scene of a good-bye party for Abbe Don at the Rheingolds' house in Sausalito. Don, who met Steuer working at Apple and introduced him to Rheingold, was off to graduate school at the M.I.T. Media Lab. Gathered on the porch were long time members of the WELL community; people I recognized from the raves I had been to; or from time spent in *Wired's* offices; and several who fit in more than one of those groups. The conversation I describe as

"shop talk," the latest new of computers, the Internet, *Wired* magazine, and the burgeoning cyberculture.

> Many enthusiastic dialogs, everybody seems to love Ken Goldberg's Tele-excavation project, much common argot—TCP/IP, POP, geek jokes about the c-shell…Talk of up-coming trade shows (Interop?) and the virtues of the NeXT [computer]…interspersed with fervent discussions of Brenda Laurel's brand new book [*Computers As Theater* (1993)]…People keep telling me to read Stewart Brand's book about the Media Lab where Abbe is going. (Cool n.d.)

The pleasant, familial sense of that evening lingers in my memory as that of a small town sending one of its own off to the bright lights of a faraway city. Parties and celebrations, no less than the professional collaborations linking attendees, were crucial vectors through which the WELL influenced a new generation on the Internet in the early days of the Web.

In addition to the overlapping membership and sense of fictive kinship between the two groups, Steuer's conception of Cyborganic also drew on the WELL in significant ways. Both were businesses built on hosting a regionally based online community. As has been well documented (Smith 1992; Rheingold 1993; Brand 1995; IFTF 1996), the WELL was about to go out of business until fans of the Grateful Dead migrated en masse to the conferencing system in 1985. Their subscriptions helped sustain the fledgling enterprise in the early days of member-based online communities. "Dead heads," as they called themselves, came together at Grateful Dead concerts and caravanning between them as they followed the band. The WELL offered a way to sustain connection between concerts. It was the combination of online and face-to-face gathering places, Steuer explained, that was

so crucial to building a thriving community. He pointed out that the WELL had

drawn on this when they began to host monthly "office parties" to offer WELL users

the opportunity to meet face-to-face. This insight lies at the heart of Steuer's vision

for Cyborganic as a local community constituted and sustained through both online

and "flesh and blood" channels. Steuer also drew my attention to the WELL's policy

of requiring new user accounts be authenticated via a phone conversation between a

WELL administrator and the individual at the phone number associated with the

credit card on the account. Though WELL users were identified to one another by

their logins, and were free to remain pseudonymous to the community, WELL

accounts had to be tied to individuals whose real world identities were known to

administrators. The tenet that accounts not be anonymous was one of the founding

principles of the WELL community. It is closely tied to a second principle referred to

as "you own your own words," or YOYOW and described on the WELL website.

> The original intent of YOYOW was to serve as a disclaimer,
> reminding you that you were taking responsibility for your actions in
> the discussions. The phrase was later extended to clarify for members
> that no claims on your copyrights were being made by the WELL, and
> that you would be responsible for enforcing those rights. (The WELL,
> "YOYOW," http://www.well.com/yoyow.html, accessed August 1,
> 2008)

The YOYOW principle worked because the WELL did not permit anonymous

accounts and individuals were made conscious that they would be held responsible

for their actions (what they wrote) in discussions. Both tenets were put in to practice

in Cyborganic: anonymous accounts were not created, and members owned whatever

words and media they posted. In these central principles of community, and its

example as a business built on hosting a community, the WELL was a model for Cyborganic. Both were exemplary communities founded to discover and share the benefits of computer-mediated communication. Both insisted members be just as accountable for their online behavior, as they were in the rest of life, offline.

The legacy of the regional mix of high-tech and hippie culture detailed in chapter 3 is also clear in the history and evolution of Cyborganic beyond these connections to the WELL. The fact that Steuer, a Macintosh user since 1985, met Don and Rheingold through his summer internship at Apple is emblematic of an entire line through which the countercultural and utopian vision of personal computer pioneers passed to a new generation that came of age in the 1990s. Apple pioneered, first, the personal computer with the Apple II line, then, the graphical user interface with the Macintosh. With a host of wares from QuickTime to iTunes, the company continues to be an innovator in networked, multimedia computing. Billed as "the computer for the rest of us" in its famous 1984 advertising campaign, the Macintosh has long appealed to those whose primary use of computers is for art and design, rather than business or science. Multimedia and desktop publishing were both significantly Macintosh-driven and were an important influence on the Cyborganic project.

Cyborganic was, unmistakably, "Mac and Unix" territory. Though there were certainly many Windows and DOS users in the community, the culture of corporate computing represented by Microsoft was explicitly rejected in favor of the ideology of freedom and creative expression that figures in both Apple and open source

culture. Almost all the desktop machines on the Ramona local network (LAN) ran

the Macintosh operating system. In fact, the only "Windows box" recorded in my

1995 inventory of computers devoted to the Cyborganic business is a test machine, a

desktop Pentium used to see how websites would look to Windows users. The desk

this computer was on was decorated as a voodoo shrine with a rubber chicken and

lava lamp, a mocking reference to the voodoo required to keep a Windows system

running. Even beyond Ramona Avenue, there were significant numbers of

Macintosh users in the Cyborganic community, and many Apple employees and

former employees were members of the group. For example, Don had worked on

pioneering multimedia projects at Apple in the late 1980s. A charter member of

Cyborganic, Don's home, half a mile from Ramona Avenue, was connected via

ISDN to the Ramona LAN for almost a decade beginning in 1994.

Apple's influence is also evident in Cyborganic's mission to evangelize the

Internet as a platform for personal publishing. Use of the terms "evangelize" and

"evangelist" in the context of computing originated at Apple (Kawasaki 1990), and is

now common in the industry to refer to those whose job it is to market new

technologies, protocols, and standards, rather than simply specific products. Apple's

influence on Cyborganic can be seen in more playful detail in the practice of

including "MacPaint Art, done on our Macintosh 512" (a computer from the 1980s)

as a regular feature of the Thursday Night Dinner Web Dispatches. Apple also

figures prominently in the heroic narrative of the "garage start-up" so central to Bay

Area Internet culture. Just as Hewlett-Packard, Apple was bootstrapped in a Silicon

Valley garage and I heard the story of "the two Steves" (Jobs and Wozniak) starting Apple out of Jobs' parents' home in the 1970s many times from my informants, particularly in the first year of fieldwork, before a new crop of garage start-ups (Yahoo!, Google) provided fresh examples of the ideal.

There are strong family resemblances between the practices and social imaginaries described in my Cyborganic history and those of the computer hobbyist clubs, "faires," and shops that Freiberger and Swaine (2000) write of in such compelling detail. All involve: (1) a blend of technology, enterprise, and sociality; (2) a combination of face-to-face gathering and mediated communication—before computer networking, this took place via print newsletters, magazines, store bulletin boards, and the like; and (3) the production of new imagined communities (Anderson 1991) constituted around and through computer media. One way to describe the regional and cultural legacies manifest in Cyborganic is in terms of the four-layered Internet culture that Castells delineates as techno-meritocratic, hacker, virtual communitarian, and entrepreneurial (2001:37). Each of these cultural flows is evident in Cyborganic.

The techno-meritocratic culture invokes the wedding of science and industry that began in 19th century America (Noble 1977), Terman's legacy of university-industry collaboration, and Sputnik era government funding of university science. This strand of Internet culture can be seen in the role universities play in the network history of Cyborganic. Universities were crucial junctions and vectors through which new generations were socialized into Internet culture. Steuer met his Apple

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colleagues through Winograd's seminar at Stanford where industry professionals were regular guest speakers. Steuer (at Stanford) and Behlendorf (at U.C. Berkeley) used the computing and network resources available to them as university students to bootstrap projects that were decidedly extracurricular and this usage neatly captures the fusion of university, industry, and do-it-yourself (DIY) hacker and communitarian cultures that came together in Cyborganic. The vast majority of Cyborganics were college educated; many had, or were pursuing, graduate degrees. Universities furnished, not only access to computing resources and training, but connections to industry experts and researchers, as well school-tie networks that served as a primary channel through which skilled personnel were recruited to business and community projects, as well as other social networks.

In the last decade, hacker and open source culture have been the subject of much industry and academic research and writing. "Native" spokesmen such as self-described "hacker anthropologist" Eric Raymond, have championed open source as a revolutionary social technology for software development (1999). Legal scholar Lawrence Lessig has argued for the extension of free and open source software practices to other arenas of intellectual property (Lessig 1999, 2001) and scholars such as Castells and Pekka Himanen (2001) have emphasized the role of "the hacker ethic" in the development of the Internet. The influence of this hacker culture is manifest in Cyborganic's membership in the wider free/open source software community that grew up around the Unix operating system. This is most apparent in Cyborganic's early connections to the Apache project and The Little Garden (Figure

4.1), a bandwidth sharing cooperative that included such longtime hackers as FidoNet creator Tom Jennings and cypherpunk John Gilmore, employee number 5 at Sun Microsystems, founder of Cygnus Support[9], creator of Usenet's .alt hierarchy, and one of the founders of the Electronic Frontier Foundation. It was through TLG that Steuer established Cyborganic's first full time Internet connection, going in on a subscription to a T-1 line from UUNET that was shared among individuals and geek communities in the Bay Area—from 'SCRUZNet, in Santa Cruz, to Cyborganic, Jennings, and Gilmore, in San Francisco, who all wanted Internet connectivity at home "in the City." Such practices as setting-up a home Internet server—at a time when most of the 20 million people estimated to be on the Internet connected through institutional networks or dial-up commercial services—show the influence of hacker culture in Cyborganic.

As the genealogical connection to the WELL suggests, Cyborganic's communitarian discourses and imaginaries drew inspiration from telecommunities of earlier eras. Because the virtual communitarian dimensions of Cyborganic are the subject of the next chapter, I will say little about them here, other than to note evidence in the history of a form of techno-sociality pioneered in the counterculture by the New Communalists. The central roles played by SFRaves, Thursday Night Dinners, the Cyborganic mailing list, and community groups of all kinds (residential,

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[9] Cygnus was one of the first businesses built on supporting free software.

arts, recreational)[10], testify to the virtual communitarian elements of Cyborganic and to their importance in bringing networked computing from universities and workplaces out into everyday life. Perhaps the most visible legacy of the virtual communitarian strand of Internet culture lies in the term *community*, a social imaginary that appeared everywhere in the Web industry starting around 1995, and has remained a cultural keyword of the type Raymond Williams examined (1976). *Community* is certainly the key term or social imaginary linking the various phenomena that came together in Cyborganic. The Ramona neighborhood, Cyborganic's business start-up, and the wider online and face-to-face network of people who identified as Cyborganics, all grew together; and though the term will be examined critically in subsequent analysis, *community* is the only social form adequate to describe or contain the phenomena Cyborganic encompassed.

Finally, in discussing the legacies that situate Cyborganic in the longer history of Bay Area Internet culture, I turn to inheritances in the entrepreneurial line. Cyborganic was itself a start-up business, of course, and most members of the community worked as employees or contractors at start-up ventures, or launched their own ventures. While most of these start-ups never "went public[11]," a few did (CNET, Organic, Critical Path) and some Cyborganics did, in fact, make their

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[10] For example, the Ramona LAN was a residential group; while Medusa.org, a working group for women artists and writers, was arts centered; and groups such as SFRaves represent communities that come together around recreational interests.

[11] That is, most did not become publicly traded, shareholder-owned companies in an Initial Public Offering, or IPO.

fortunes in the boom years of the Web. Job turnover was high and many Cyborganic members moved among the firms represented in Figure 4.1, in the style that has long been characteristic of Silicon Valley. As noted, the mythic narratives of garage start-ups, heroic hackers, and entrepreneurs who made fortunes doing what they loved (e.g. Jobs, Wozniak, Gilmore), continued to hold currency among my Cyborganic informants. These narratives contributed to the social imaginary of the start-up in light of which quitting a good corporate job to work grueling hours (50 to 80 hours per week) for stock options (or equity), and either deferred or below market pay, made sense to a good portion of Cyborganic's members. This willingness to expend individual resources creating prototypes and demonstration models (demos) "on spec" had many varied motivations (from riches to reputation), but the examples of earlier generations of geeks who had gone out on their own and made fortunes (e.g. Sun Microsystems, Cisco) loomed large in the discourse. Talk of "IPOs," "quiet periods," "golden handcuffs," "founder's syndrome," and other expressions related to start-up firms, pervaded the Cyborganic community in the boom years. Such conversation was not limited to any group within the community, but suffused the whole, graphic designers, software coders, and would-be entrepreneurs alike. Few Cyborganics were what one would call "business people:" there were few MBAs and few had studied business in college. Yet, the history and culture of high technology entrepreneurialism were "in the air" (Marshall 1920) in San Francisco in the 1990s.

Theme 2: Cyborganic's Milieu of Innovation

The second argument I seek to make from the history of the project is that Cyborganic joined place, technology, and community in productive relationships that: (a) were central to the development of Web publishing in San Francisco in the mid-1990s; and (b) exemplify the regional and cultural advantage of what are called "milieux of innovation" (Castells and Hall 1994:8). In this argument, I draw on research outside anthropology that examines the distinguishing features of entrepreneurial regions and "technopoles," i.e., concentrated areas of technological innovation and economic production.

Silicon Valley, "hailed worldwide as an heroic model of innovation in the service of dynamic economic growth" (Castells and Hall 1994:12), has been the focus of much of this scholarship which emphasizes the importance of the region's local culture in creating its self-sustaining milieu. Saxenian's work, for example, has demonstrated the crucial role of dense social relations and the culture of open exchange in Silicon Valley's superior economic performance over other high-technology regions, such as Route 128 in Massachusetts (Saxenian 1993, 1994). In their global study of technopoles, Castells and Hall emphasize that in Silicon Valley there is "a strong cultural specificity in the values and lifestyle…that forms the human basis of this leading milieu of innovation" (1994:21). They further highlight the importance of culture in their analysis, stating that technological revolutions have always been associated with specific cultures that "are essential ingredients of the

ability to innovate and to link innovation to the applications most valued in a given society" (1994:21). More recently, researchers have examined Silicon Valley in terms of its culture of entrepreneurship (Bahrami and Evans 1995); networks of social capital (Cohen and Fields 1999); and as a complex ecosystem of interacting institutions, individuals, and culture (Kenney and Von Burg 2000). This work underscores the need to look beyond firms, institutions, and industry-specific agglomeration, at Silicon Valley's social networks and culture as the source of the region's productivity and longevity as a milieu of innovation.

Cyborganic built on Silicon Valley's entrepreneurial culture of informal sociality to create new productive relationships that contributed to the rise of San Francisco's SOMA district as an important hub of the Internet industry in the 1990s. My study of Cyborganic provides an ethnographic example demonstrating how milieus of innovation bring place, technology, and community together in productive ways. The importance of universities, an intensely work-centric, risk tolerant culture, and high degree of inter-firm cooperation, and mobility—documented in the case of Silicon Valley (Saxenian 1991a, 1993, 1994; Castells and Hall, 1994)—are all empirically observable in the Cyborganic case, as well. In the Cyborganic context, place refers both to the local concentration of residences and companies in particular neighborhoods in San Francisco's Mission/SOMA area and to their regional location commuting distance from Silicon Valley. Community refers to the dense multi-stranded social relationships and multiple, overlapping networks of kith, kin, colleagues, business partners, and neighbors through which Cyborganic was realized.

The historical narrative I have presented shows Cyborganic's productivity by tracing the roles community members played in the creation of the first advertising-supported Web publication (*Hotwired*), a leading Internet advertising firm (Organic Online), and two innovative software projects (Apache and Vignette StoryServer). All these ventures figured centrally in the business evolution of the Web (Reid 1997) and the dense ties that linked them illustrate vividly the inter-firm relations characteristic of milieus of innovation.

Cyborganic and its members also contributed to the development of Web publishing through process innovations and by understanding the central role user-generated content plays in the new media. Though less tangible than firms and software, these contributions are arguably as significant to business innovation and the development of the Web publishing industry. By examining these two innovations in more detail, I seek to make that argument. Both process innovation and user-generated content figure centrally in the work Cyborganic members undertook on the *Hotwired* and CNET launch teams. Closer analysis of this work will serve to explain what these innovations were, how they were significant, and to give a richer, more ethnographic sense, of the roles played by Cyborganics, not just individually, but as a community.

Before *Wired* launched *Hotwired*, no one had ever published an advertising-supported online magazine. Despite the name, *Wired* was run by people who did not understand the day-to-day practices of Internet culture. The publishers depended on

San Francisco's ready supply of relatively cheap[12], young, technology-savvy labor, not only to feature the "digital revolution" in content and design [13], but also to build the technological infrastructure, organizational forms, and practices to support online publishing. Indeed this was the first project Steuer and Behlendorf worked on at *Wired*. As Steuer recounted in a 2004 interview, "When I started at *Wired* we were ripping text articles out of Quark Express documents by hand and putting them up for free e-mail distribution." *Wired* had not yet become an informational enterprise (Castells 1996, 2001; Zuboff 1988). Though they had successfully incorporated desktop publishing into their core business practices (e.g. use of Quark Express page layout software), they had no idea yet how to incorporate the Internet, nor the tools to do it.

This knowledge came from staffers like Steuer and the people he brought in as leader of the *Hotwired* launch team. According to Steuer, despite his efforts, "*Wired* got it wrong" because they failed to grasp the importance of investing in the necessary publishing infrastructure.

> Where *Wired* fell down and never recovered was [CFO] Andrew
> Anker's refusal to spend the money on technological infrastructure to
> support publishing. *The alternative Wired used was a million gnomes
> and elves.* And they kept using that until very late in the game. Anker

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[12] For example, *Wired's* graphic designers made less than $30,000 a year and scores of lesser paid contractors and editorial staff made minimum wage, if you factor in total working hours, with interns making less than that.

[13] In his study of "no collar" Web workers in New York, Andrew Ross also notes the way "photogenic employees" were used to promote new media companies (2003:91).

had been burned by database projects that never launched at previous companies and never had faith in the investment. (Jonathan Steuer, interview, November 5, 2004, emphasis mine)

Beyond the resistance to investing in "tech projects MBAs don't understand" there was also a resistance to the standardization of "template-driven design" and the re-organization of labor it requires. Throughout the organization, *Wired* used manual labor ("gnomes and elves") to handle tasks that might have been automated because they believed it was "cheaper to hire editorial and production people forever than to invest in a technology project" (Steuer, interview, November 5, 2004).

An example of "gnomes and elves" thinking as a failure to "get" the new media paradigm can be seen in the way *Wired's* management handled the unexpected glut of subscription requests that came in via e-mail after the publication of their first two issues in 1993. Though their e-mail address had been published in the magazine, no system had been put in place to process the in-coming mail. As a result, thousands of subscription requests with the credit card numbers, representing tens of thousands in revenue to the new magazine, sat, unprocessed, in an electronic inbox for weeks. *Wired's* editors wanted to hire "a temp" to process all the subscriptions by hand. Newly arrived in the field and looking for paid employment, I went to the *Wired* offices in September 1993 to ask about opportunities and this was the only job they were looking to fill immediately. When Steuer came over to ask how my meeting had gone, I told him about the subscription problem and expressed my confusion at why they hadn't just written a script to strip out the strings of credit card numbers, names, and addresses in each e-mail. Steuer had not heard about the

problem before this, but agreed it was best handled with a little programming. Within the week, one of the engineering staff had written a script, the subscriptions were processed, and the need for a "temp" worker disappeared. This anecdote speaks neither to my acumen, nor *Wired* management's lack thereof, but rather to two distinct informational paradigms. Using a script seemed obvious to me, not from any special technical training, but from socialization in geek culture. Concepts and practices of automation are core cultural competencies, what some scholars call "tacit" or "non-codified" knowledge[14] (Storper 1997; Forsythe 2001), and are "picked up" by community members, as if by osmosis.

With or without a publishing system, launching and producing the online magazine *Hotwired*, required process, design, and technical standardization. Given the paradigm gap described, this was generally led by teams and individuals doing the production work, rather than directed from above. The story of how *Hotwired* "invented" the advertising banner illustrates this point. With its launch in October 1994, *Hotwired* created the first "banner ad" and set what became the standard size, shape, and placement for advertisements in the early years of the Web—a rectangle 468 pixels wide by 60 pixels high, placed horizontally across the top of Web pages. The decisions enshrined in that standard were not made "top-down" by management, research, or design, but "bottom-up" in ad hoc negotiation among those making the

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[14] While knowledge of automation is highly codified and often explicit in geek discourse, it is also part of the general knowledge of community members, even those who are not programmers.

banner. *Hotwired* launched with advertisements for several companies and products including: AT&T, Zima (a malt beverage produced by Coors Brewing), Club Med, Volvo, and Sprint. Though each of these might legitimately claim the first banner, the Zima and Volvo sales were made first[15]. Organic Online was hired to create both the advertising banners and the "mini-sites" to which they linked because few advertisers had a Web presence of their own at the time (Reid 1997:299).

Figure 4.3: AT&T banner ad that, with four others, was first on the Web
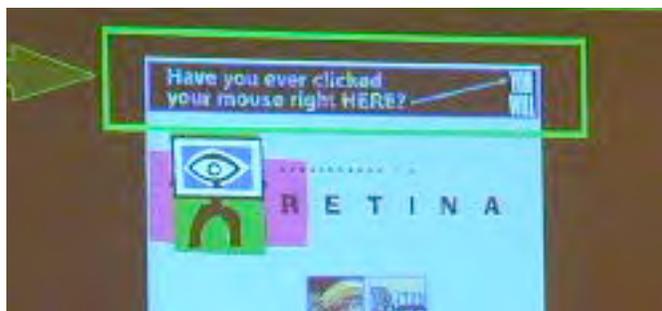

Figure 4.4: AT&T banner ad as it appeared on *Hotwired*, October 1994

When it came time to make the Zima banner, someone at Organic Online called over to *Hotwired's* offices to ask what size to make it. Though I was not present at the ad hoc meeting called to work out an answer, I heard about it during fieldwork and confirmed the story in this 2004 instant message exchange with Ian

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[15] Dan Haig, personal communication, February 23, 2007.

McFarland, an engineer at *Hotwired* and member of the Cyborganic community,

who gives an eyewitness account of the discussion.

Jennifer (me):	quik 1 ... why is std banner ad that size? was invented chez Hotwired for Zima, no?
Ian (informant):	468x60
Ian (informant):	My great contribution to mankind. :-)
Jennifer (me):	Yours?... tell me the story again
Ian (informant):	Mine and 3 other people.
Jennifer (me):	Organic made the banner, i know that much, was Nelson 1/3?
Ian (informant):	We were sitting around, me and Jeff Veen and um, me and my bad name memory... The art director at HW [Barbra Kuhr], and one other person.
Ian (informant):	Dunno. Could have been. Him or Steuer.
Ian (informant):	We said, well, we're designing for 640x480...
Ian (informant):	And Netscape is this wide....
Ian (informant):	And leaves this much space...
Ian (informant):	So let's make it 468 wide...
Ian (informant):	And 60 high looks good.
	(Ian McFarland, personal communication, May 12, 2004)

The 468 x 60 pixel size arrived at in this ad hoc meeting was used for all the

Hotwired banners and it remains the industry standard for "full banner" ads[16] today.

Shortly after *Hotwired* launched, Steuer left to consult for CNET. CNET's

management had significant capital and they were like *Wired* in that they understood

their core business, but did not yet have a grasp on how to fully exploit the

productive and competitive value of information technologies. Yet, unlike *Wired*,

CNET's founder and CEO, Halsey Minor, was willing to follow Steuer's advice, as

Steuer explained in a 2004 conversation: "Halsey Minor understood scale, he was a

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[16] Interactive Advertising Bureau, "Ad Unit Guidelines,"
http://www.iab.net/iab_products_and_industry_services/1421/1443/1452, accessed
September 4, 2008.

business guy, so he was willing to take the plunge, to invest in a publishing infrastructure." Minor approved the financial resources and Steuer brought Michael Gold over from *Hotwired*, to the design the publishing system that became Vignette StoryServer.

Steuer hired the Web production team that launched the CNET website with new publishing processes and infrastructure and most people on the team were core members of the Cyborganic community. In addition to Gold, Steuer also hired Donaldson from *Hotwired* and Dan Haig from Organic Online. Together they designed CNET's posting area, developed the site architecture, and managed the ten person Web production staff through the re-launch of CNET's website in the spring of 1995. Gold built the CNET bulletin-board system by hand and the team of Cyborganics collaborated effectively on the project. The key innovation Steuer and the team he hired brought to CNET was how to organize and structure the process of collaboration among business, technology, and design. As Steuer put it:

> The business people need to understand that implementation requires skills they don't have. They have to bring in real technology folks and not be afraid to get into software development. The technology people need to understand rapid prototyping, building lots of stuff and letting it fail. And the design people, who understand the value of continuous cycles of refinement, need to understand what's good enough.
> (Jonathan Steuer, interview, November 5, 2004)

These are precisely the relations of production he helped CNET organize in designing and specifying the publishing system with Gold. The infrastructure and process innovations this team of Cyborganics put in place created long lasting value for CNET. They infomated their online business, positioning CNET to become a

leading player in the Web portal market of the 1990s. Between 1995 and 1998, CNET launched several technology news and utility websites (Download.com, Shareware.com, Search.com, Moviefinder.com), spun out the StoryServer software with Vignette, and began syndicating their news feeds to other online Web portals, such as Netscape/AOL.

As an innovator, Steuer is exceptional for understanding very early on the interface between technical infrastructure and the production and publishing model of an online magazine. The tacit knowledge and process innovation he and other Cyborganics brought to *Wired*, *Hotwired*, CNET, and Organic Online drew on practices of mediated collaboration developed in peer groups linked through many multi-stranded ties. They are innovative because they represent some of the earliest solutions to the requirements and constraints of building and maintaining commercial Web publications. While *mediated collaboration* directs attention to the behind the scenes, or screens, aspects of Web publishing, Cyborganic's innovations also bear on the *collaborative media*—self-published, user-generated, and aggregated content—that would come to fill those screens as the Web developed into a popular phenomena. Cyborganic's members, and Steuer in particular, understood the role mailing lists, discussion boards, and chats, could play in gathering communities of interest around content online. Indeed, this was at the heart of the Cyborganic project.

The centrality of user-generated content was not, however, immediately recognized or embraced by those with experience in older media, even those such as

Wired publisher Rossetto. At *Hotwired*, tensions arose over this gap even before the website launched, with Rossetto on one side and Steuer and Rheingold, who Rossetto had hired as *Hotwired's* executive editor, on the other. Though *Wired's* business team initially struggled to define precisely what *Hotwired* was, they settled on calling it a "cyberstation" consisting of "a suite of vertical content streams with an integrated community space" (Keegan 1995). For Steuer and Rheingold, who were heading *Hotwired's* online community initiatives, it was the community space that was central. Steuer designed *Hotwired's* discussion system, *Threads*, and worked with Rheingold to make reader forums and reader-created content central in the online publication. Rossetto, however, did not share their vision of online community and was squeamish at the idea of featuring amateur content under his masthead. His comments to journalist Paul Keegan illustrate the divergent views.

> "To me, it's like the fascination with CB radio," Rossetto says about Steuer's and Rheingold's idea of virtual community. "It is amazing, when you first get into it, to be able to just talk to whomever you want to whenever you want to. But in the long run, people actually want something else out of media. The major thing that's going to be necessary in the future is the ability to take the raw material of the world and make sense of it. Because you as a writer or me as an editor can do a better job of interpreting reality than they could."

> Um . . . doesn't that make this supposedly empowering, many-to-many medium an awful lot like the old, one-to-many mass media?

> "No," Rossetto insists, "the mass media talks to everybody. It tries to be abstract and discover a voice and attitude that everybody can connect to. I think Hotwired focuses on a voice and attitude that certain people will connect to. We don't need to have an audience of 100 million people. We're happy with an audience of maybe a million. But a million is a lot different than 100 million." (Keegan 1995)

Thus, for Rossetto, the innovative and revolutionary thing about the Internet is the

ability to target media produced by professionals (and the advertising that funds it) at

specific audiences, ideally ones with spending power and influence, like *Wired's*

readers. For Steuer and Rheingold, who already went about their daily professional

and personal lives in online communities, Rossetto's view missed the most vital

possibilities of networked media entirely. As Keegan reports, these differences

strained relations between Rossetto and those he had hired to lead design and

production on *Hotwired*, and both Steuer and Rheingold left the publication only

months after its successful launch.

> Steuer was instrumental in getting Hotwired off the ground but
> clashed repeatedly with Rossetto over what "virtual community"
> means. He quit in January. "I think Louis's claim that he has any
> commitment to the idea of community is a lie," he says... Steuer
> dismisses Rossetto as a Net latecomer. The first issue of Wired
> mentioned the Internet only once—and in a manner that drew some
> snickering, even from Rossetto's friends. Above Negroponte's
> column, his E-mail address was printed as "nicholas@internet,"
> which would be like addressing a postcard c/o Planet Earth. Perhaps
> realizing his limitations, Rossetto chose as Hotwired's executive
> editor Howard Rheingold, author of the best-selling book, "Virtual
> Community." But like Steuer, Rheingold wanted Hotwired to be more
> about bringing people together and less about selling Volvos.
> "Hotwired is a business with a payroll," says Rheingold, who also
> quit. "There's nothing wrong with that, but don't pass it off as cultural
> revolution." (Keegan, 1995)

As this excerpt indicates, there were distinct differences between the Net community

that developed before the first wave of Internet commercialization and those who

saw the Internet primarily in commercial terms. Keegan's story captures the tension

between these groups and their very different understanding of the significance of

the many-to-many capabilities of networked media. Producers of traditional media (books, magazines, cinema) who came online during the dot-com boom were fond of the slogan "Content is king!" However, as the most recent developments on the Web bear out, the insight that *user-generated* content is king seems to have been more prescient.

Though Steuer and Rheingold were not able to realize their community-centric Web visions at Hotwired, each went on to do so in his own venture. Steuer turned full force to Cyborganic in the spring of 1995 and, in 1996, Rheingold founded Electric Minds, an international Web community and another of the many SOMA start-ups with Cyborganic members in leading roles[17]. Their ideas about the centrality of user forums, content, and community were disseminated, not through the large, more commercial ventures in which they were first involved, but through their own enterprises, home grown among a community of producer/users with shared cultural knowledge of collaborative media. These innovations, which with Web 2.0 have come to dominate popular understanding and practice on the Web, came into the mainstream bottom-up, in collaborations between those with capital, like Wired Ventures and CNET, and those who were hired to design and produce the first commercial publications and media on the Web.

Though the imaginaries and practices of community on the pre-Web Internet may not have translated in full to the dot-com era, the word *community* came into

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[17] Howard Rheingold, Abbe Don, Justin Hall, and James Home were among the Cyborganics who worked at Electric Minds.

ubiquitous use to refer to the gathering of audiences online around specific interests.

Though the term "cyberstation" was replaced by "portal," integrating vertical content

streams with "community" became the primary business model for the Web and was

adopted by Yahoo!, GeoCities, Amazon, Hotmail, and Netscape, to name only a few.

In his work as a consultant, Steuer regularly gave talks about Internet media and one

of his standard presentations was on the basic goals of Web portals. He referred to

these goals by the mnemonic "the Five C's," which were content, commerce,

community, context, and connectivity.

Content (Hotwired)
- provide original information
- package and brand information from content partners
- attract attention toward information

Commerce (Amazon)
- sell products
- sell services

Community (Geocities)
- build affiliation
- create a medium for self-expression & discourse
- gather groups with shared interests
- build shared information resources

Context/Search/Index (Yahoo)
- index other sites' information
- make that information accessible and searchable

Connectivity (hotmail, AOL)
- provide email (hotmail)
- provide fax service (efax)
- provide Internet service (AOL)   (Steuer 1995)

While content and commerce are product-driven, Steuer would point out, community

is people driven and requires different sensibilities of those seeking to build an

online business around it. In focusing his own start-up on community, he and his

collaborators in Cyborganic created forums and tools for self-expression and

discourse; used inherited forms of networked media (e-mail, chat) in new ways; and innovated new forms and genres, for instance, proto-blogs such as Justin's "Links from the Underground," and Geek Cereal. These will be examined in the following chapter that, in contrast to this one, looks internally at Cyborganic, its constituent parts, practices, and community. Even before examining the networked social media that the group produced and practiced in its own community, Cyborganic's contributions and innovative role in the early Web publishing industry can be seen from the network history narrative and analysis of this chapter.