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Cultures and Campaigns of Resistance to Commercialization in Cyberspace

by

Peter Garcin. B.A.

A thesis submitted to the Faculty of Graduate Studies and Research

in partial fulfillment of

the requirements for the degree of Master of Arts

Department of Mass Communication

Carleton University

Ottawa, Ontario

18 January 2002

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submitted by Peter Garcin, B.A.
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the degree of Master of Arts

Thesis Supervisor

Associate Director, School of Journalism and Communication

CARLETON UNIVERSITY
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Abstract

This research project examines the various user communities on the Internet that engage in activities that can be said to be in opposition to the commercialization of cyberspace. As the Internet becomes increasingly privatized, there is a risk that the cultures and communities that helped build the Internet are being marginalized by the influx of commercial services into cyberspace. In contrast to the for-profit Internet that is emerging, this analysis studies a number of communities that offer an alternative method of organization to that of commerce. This research project studies open source, file sharing, piracy, and cracking in order to discover the alternatives to the commercial Internet and to provide a basis for active citizenship both in cyberspace and the real world.

Acknowledgements

In some ways, this project has been in the works from the very first day I logged onto a BBS sometime in the late 1980s. I am indebted to countless people that I have encountered in my many years as a cyber-citizen. To begin to list all the people that have played a role in contributing to this project would take another 150 pages.

I am grateful to the vibrant BBS community that introduced me to online interaction, and to the thriving Internet community that stimulated many of the ideas in this project. I acknowledge the plethora of discussions and ideas that are let loose every day on slashdot.org that have spurred on countless investigations.

I would like to take a moment to thank “Sharpe”, who keeps me up to date on all the latest warez, and to “Geckosan” who pointed out to me that cryptography is the way of the future.

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Chapter 1: Defining the Boundaries of Cyber-Utopia

Introduction

How many studies of the Internet begin with a statement describing the revolutionary potential of this new medium? The claims of revolution may or may not be overstated, depending on how you frame them. Undeniably, the Internet is an influential force among communications technologies and its impact extends beyond the realm of computers – but is it truly the utopian catalyst as its champions proclaim? Unfortunately, I am not here to answer these questions or add to the mythology, nor am I here to dispel the myths of techno-utopia. What interests me about networks are the interconnections – not simply the connections made between nodes in the network, but the extensions into just about every imaginable realm outside the field of computers. What fascinates me about the Internet is its inclusiveness – its unlimited geography, the co-existence of government and citizen, the free exchange of information. In theory, the Internet is a totally open communication network between every point on earth. It stores the collective experience and interests of all people and grants access to everyone. The Internet is a tool of connection, unity, peace and democracy. There is no power structure and there is no ownership, just the expansive digital commons.

That description is of the utopian Internet that has become popularized in the new mythology of technology. The Internet is fascinating because in practice it occasionally manages to reach these utopian goals. However, the uneven nature of its achievements and potential is easy to uncover. We simply need to look at issues like the “digital divide” – access to a computer and the Internet and the education to use it effectively are limited almost exclusively to first world countries and certainly an extremely slim minority of the world’s population. Increasingly, the geography of the Internet is being reshaped to mirror the divisions in the real world. Cyberspace is no longer an electronic frontier – it’s been colonized.

The process of colonization is one of the main focuses of this analysis. What I will undertake in the coming chapters is a study of various online communities that are collected under the banner of resistance to commercialization. This project is part archaeology, part anthropology, part cultural studies, part political economy, part computer science, part textual analysis, part economics, and part political science. The focus of all these approaches is to examine the groups that lie outside of the emerging commercial mainstream. I will attempt to describe how they operate, what they represent, and even venture into the realm of why they exist and operate as they do. What all these groups have in common is that they do lie outside the commercial mainstream – they represent resistance factions to the colonization of cyberspace. In some cases, the resistance is active and targets commerce directly, but in others these actions pose an alternative to commercial organization.

We might describe the project before us as a mapping project. Throughout the course of this examination, we will chart the geography of a specific section of cyberspace. What we can hope is that the map we develop of these communities does not become an archaeological reference and the communities themselves relics of an age past.

Is it all just a lot of hype?

Before we begin an examination of the resistance to commercialization, we should first ask a few questions to determine the actual state of cyberspace. The first and most obvious question would be: "Is cyberspace really being invaded by commerce?" Without hesitation, we can answer 'yes' to that question. The rapid divestment of public interest in the networks of the Internet and the emergence of sprawling private networks are the first tangible indicators of a reconstruction project that seeks to rehabilitate the open public network into a controlled access commercial delivery network. Since the development of the World Wide Web in the early 90s, the push to build a market out of the Internet has intensified. There are countless examples of commerce trying to find its way in cyberspace. The advent of banner advertisements, the dot-com boom (and subsequent bust), the rabid legal battles over file-sharing – all of which are indicators of the desperate desire of capital to establish the market system on the Internet.

Are these necessarily negative developments? As I mentioned, utopian visions surrounding the Internet abound, and the prophets of capitalism predict that the Internet will revolutionize not just commerce, but life as we know it. However, the pay-per-

services of capital's cyberspace and the open-source, open-architecture origins of the Internet are mutually exclusive. The projects of media mega-corporations are not just reconstruction projects, but a re-visioning process by which the digital commons is colonized by capital and transformed into a mechanism for generating surplus value. The victims of the reconstruction project will be the democratic spaces and digital citizens who gave the Internet life in the first place.

Faced with cultural extinction, it becomes clear that cyberspace is a space worth defending from the invasion by capital. The popularization of the Internet led to the near extinction of the once popular BBS (Bulletin Board System) culture of the 70s, 80s and 90s. Drove of users left their local BBS communities for the gold-rush on the global Internet¹. On the surface, the Internet had everything that BBS communities offered – and more. However, we will see that the core attributes of the BBS culture were the same ideas embraced by the founding cultures of the Internet, and that these democratic and open communities are the primary targets and victims of the commercialization of the Internet. It is in defense of this openness that users of the Internet take up arms against the invasion of capital. Throughout this analysis, a wide variety of resistance methods employed by the citizens of the Internet will be catalogued and studied in order to explain and understand why it is necessary to fight the ongoing commercialization of the Internet in order to preserve their open communities.

¹ BBS listings on thedirectory.org haven't been updated in years, and recent listings of telnet based BBSes count only 500 BBSes worldwide.

Charting the course

We begin our analysis with a survey of some of the literature written about the architectures of the Internet and cyber-resistance. The theoretical works that my analysis will draw upon will range from the theories of Marx to modern technological theorists. While the area of study is extremely narrow, the range of perspectives that it encompasses is quite wide. In the interest of remaining focused, much of the literature discussed will focus on technology. However, the implications reach beyond mere technological impacts and branch out into the realms of democracy and citizenship, privacy, and labour relationships. We might place the situation in cyberspace in the larger context of continued capitalist expansion and the drive towards privatization.

Marx would certainly say that capital views cyberspace as merely another continent to colonize. In *Capital*, Marx details the capitalists' need to constantly expand their empire, and the often-violent means by which that colonization occurs. If we consider that the Internet was developed as a public project and consisted for most of its life as a linked series of university and government networks, it is not difficult to see how we might describe the digital commons in a similar way to the common agricultural lands that Marx describes. From there, we can make comparisons and inferences based on the history of the expansion of capital, and perhaps learn from the patterns of history.

What Marx provides is a valuable base upon which to build an analysis of the contemporary situation. His theories of capitalist accumulation provide a solid grounding to explain the actions of capital in its drive to commercialize cyberspace, and his calls for

revolution are relevant to those who would oppose the invasion of commerce into cyberspace.

What Marx lacks are the specifics of the contemporary situation. Modern theorists can provide a more solid discussion of the modern technological developments, and some of the developments in the contemporary political climate that may be more difficult to support using the writings of Marx directly. Dyer-Witheford's clear Marxist perspective in *Cyber-marx* gives us an excellent catalogue of the pockets of resistance that are growing on and out of the Internet. His optimism brings much needed hope, and his in-depth analysis and theorizing of digital resistance provides a branching-off point from which we can delve into the specific "circuits of struggle" that will play a central role in this thesis. Frank Webster and Kevin Robins provide a useful counter-point to Witheford's optimism. They highlight many of the flaws in the technocratic perspective and in the pipe-dreams of cyber-utopia. McChesney also holds the position that the messianic hope of the Internet is merely overblown hype. In *Rich Media, Poor Democracy*, he claims that the Net is increasingly commercial and aimed at those interested in consuming. What concerns us is not that a commercial network exists, but that an open network exists in which citizens, not consumers, can interact with each other freely and openly.

In order to understand the conflicting architectures of the Internet (the open-network origins vs. the closed network of commerce), I will draw upon the work of both Lawrence Lessig and Janet Abbate. Lessig's book *Code* is a remarkable catalogue of the

new technologies and trends that are emerging on the increasingly commercial Internet, whereas Abbate's *Inventing the Internet* provides a history of the origins of cyberspace that can help us to understand the value of the open-network model and the way that a dispersed community of individuals worked together to build the skeleton of the Internet from nothing.

From these theoretical perspectives I will delve into my own research into original Internet communities that pose obstacles and alternatives to commercialization in cyberspace. I will conduct an examination of various web sites and communities (P2P communities, hacking and piracy communities, open source communities), both through an analysis of the structure of the communities and sites and the content that they contain. In addition to web sites and communities, various commercial websites, software specifications and standards will be used as a basis to develop a critique of capital's model of cyberspace.

From these source materials, I will build my analysis that shows how the methods and machinery of commerce on the Internet seek to destroy and replace the original culture of cyberspace with a commercial-oriented replacement. Following a study of the conflicting visions of the Internet and its inhabitants I will use various forms of user resistance to illustrate the growing opposition to a commercial network and emphasize the need for a defense of rapidly shrinking democratic spaces.

Building the infrastructure of commerce

I begin my analysis with an examination of the infrastructure that lies behind both open networks and the networks of commerce. The juxtaposition of open networks with their commercial successors serves to highlight the architectures of control that are being erected by commercial entities in order to make cyberspace “safe” for business. Without regard for the original inhabitants of these spaces, business capitalizes on the success of the open network, erasing the origins in the process. In Chapter 3, we examine the raw geography of cyberspace – mapping continents rather than communities.

Actually, one of the wonders of cyberspace is that it lacks a *physical* geography. Each node is equally near, and equally far from another in virtual terms (Webster, 1999). However, in reality the network has a geography that is controlled by an increasingly select group of individuals. These cyber-governors want to extend this power into the realm of cyberspace through the implementation of an immense system of control. There are governing bodies like ICANN (Internet Corporation for Assigned Names and Numbers), industry standards committees, and courts that settle anti-trust cases and copyright disputes – all of which play a role in defining the boundaries of virtual space.

At the simplest level, the ISP (Internet Service Provider) is the gatekeeper for the Internet. Users require an ISP in order to gain access to the network and are essentially at the mercy of their service provider in terms of censorship and access limitations. A massive service provider like AOL (America On-Line) delivers large amounts of

advertising to their users as they log on and controls what users can access on the Internet. Within the “fences” of AOL, behaviour is closely monitored and censored. To see what the reconstructed Internet will look like, we need only to look at AOL or MSN (The Microsoft Network).

Climbing up another level in the network hierarchy, you have the NSP (Network Service Provider) who provides the backbone for broadband services and the physical data lines that connect people to the Internet. The plumbing of the Internet is now essentially totally in private hands. Companies like AT&T and 360Networks own large fibre-optic networks and have a vested interest in making these networks profitable rather than democratic. However, in order to make these networks profitable, they must work with software developers to implement the standards and systems of control necessary to facilitate commerce.

As the king of all software developers, Microsoft is betting that a new set of web standards will give it an audience much larger than the nearly 30 million subscribers that AOL boasts. Using a new standard called .NET, Microsoft is striving to become the primary authenticator of identities and information on the Internet, and as a result, the broker of all online transactions. Through the exploitation of their near-monopoly position and the introduction of new network-wide software standards, they are effectively reshaping the entire network into whatever they want it to be. In this case, they are trying to establish a software standard for web-based commercial services.

Establishing Control Through Software Standards, A .NET Case Study

The .NET initiative bears a striking resemblance to the Net PC that was unveiled by Sun Microsystems a number of years ago. It was essentially a cheap dumb-terminal that allowed users to browse the Internet at high speed but had no memory or processing power of its own. Those elements were offloaded to Sun's server, where all applications would be stored and run. This was supposedly going to revolutionize computing, providing cheap access to a wealth of resources for many users. For a variety of reasons (not the least of which is the danger of centralizing control) it failed, but it has been resurrected in the form of .NET. This standard will allow software to be run remotely on servers, on a pay-per basis. Instead of buying a copy of Word, you simply have to pay every time you use it. This standard is described as a user-centric standard that benefits the end-user rather than the producer of the software. It allows for a greater degree of customization, and access to a wider variety of applications. However, coupled with the Hailstorm web standard, .NET provides a foreboding Orwellian vision of control.

The Hailstorm system (recently renamed "My .NET"), which would allow web developers access (on a pay-per basis) to a wide variety of sophisticated e-commerce and web development tools, also requires authentication with Microsoft's Passport system. The centralization of authentication gives Microsoft immense control over who can use their services, and what they can do with these services. Combined with the .NET system through which Microsoft also controls applications and data, those who would like to see an open network have reason to be uneasy.

What these private interests are undertaking is a massive re-branding project through which they can re-cast cyberspace as a bank, shopping mall, ticket outlet, or travel agent. Instead of a network for communication and information sharing, it is a one-stop shopping destination.

All of these projects and visions stand in stark opposition to the original incarnation of the Internet. It was built on the concepts of openness and interconnectivity. The core applications and strengths of the Internet are not commerce but rather applications like e-mail and file-sharing. P2P (Peer-to-peer) applications have recently come under fire for doing what the Internet was built to do – share information among all users. The open-architecture model poses a threat to commerce both through its disdain for commercial ventures on the Internet, and through its “insecurity” – making it easy to circumvent capital’s methods of control.

Moving from citizens to consumers

In addition to branding cyberspace as a giant shopping mall, users have been recast into the role of consumers. Users are commodified and sold as audiences to advertisers and pushed towards the pay-per licensing model of consumption. There are likely many new users who use the Internet solely as a commercial medium, no doubt unaware of other possibilities. However, there are many who would consider themselves citizens of a digital community.

Part of the new construction agenda is to attract a new kind of user who sees the net not as a space but an online catalogue or television set. When workers were forced into the factories in the 19th century, they had to be conditioned to working by the clock – something that we take for granted nearly two centuries later. The same process is being undertaken on the Internet. Capital is breeding a new generation of users who have no recollection of the ‘free’ Internet. Despite their utopian descriptions of the new technologies, capital is actually seeking users who dislike technology and want simplicity and transparency – just swipe your credit card and receive your instant gratification, without any thought or work involved. In addition to attracting these new users, capital is mining their every activity through surveillance and data collection in order to build new markets and demographics from their virtual lives. Audience commodities take on an entirely new meaning as the possibility of micro-marketing (down to individual users) becomes a realistic possibility. Capital’s network is a space where every action is commodified and sold for profit and there is no room for an alternative.

In this section, I will not argue for complexity or elitism or a return to the arcane past interfaces with technology but I will argue for democratic participation in cyberspace – that users become digital citizens rather than consumers. The death of the BBS (Bulletin Board System) culture² took with it the local aspect of digital communities and replaced it with a vast global network that alienates as much as it connects. Participation in such a community lays the groundwork for educating digital citizens who actively participate in

² We will continually return to BBS culture to provide a reference point for our larger analysis. Because the BBS culture has been all but erased since the popularization of the Internet, it serves as an excellent model for the current situation. Additionally, we see how its structure plays a vital role in many other communities and how it can play a role as a valuable model for community structure.

their local community. It was impossible to be a passive consumer on a BBS because without your active participation, you literally got nothing out of the system. Similar communities on the Internet also prepare users for life as cyber-citizenry but face the same threat of extinction that has already claimed the once vibrant BBS culture. An archaeological examination of the BBS culture as a case study in this chapter will help reveal what differentiates a digital citizen from a consumer and what is required of these citizens to protect their space from the invasion of capital. As long as users continue to participate and maintain these communities on the Internet, an alternative to the cyber-mall of capital will exist and hopefully thrive – but it requires vigilance. Just as citizens in the real world need to be active members of a democratic community, those in the virtual world must also undertake the responsibility of citizens in order to exercise their rights – or risk losing them.

The attempt to re-cast users as consumers leads to conflict in which the actions of users in these communities is labelled illegal and those activities that oppose capital's model come under direct attack. Fan websites are transformed from adoring tributes into an exercise in copyright infringement and online music trading is no longer an exchange of mixed tapes but an act of cyber-shoplifting. In a space that was built by users, it seems clear that objection to this wholesale redefinition of their space is necessary.

Uncovering the resistance

Beginning in Chapter 5, I will discuss the various methods of resistance undertaken by users on the Internet. Some of what I will term as resistance would be more accurately described as a 'culture of resistance' in which a conscious attack upon the invading armies of capital is not launched but simply an exercise of daily virtual-life that stands in contrast to the proposed system of commerce. Others who engage in active resistance lead the charge against colonization and could be said to be engaged in 'campaigns of resistance'.

Why should users resist this incursion into their space at all? Why do it in a digital way – why not undertake campaigns in the real world? While vigilance in the real world is important and not to be ignored, there are particular reasons why in some cases digital resistance to the commercialization of the Internet is particularly powerful and appropriate. Firstly, the process of colonization on the Internet is not complete. It is not a task of reclaiming space but of defending it from invasion. The fact that these open spaces still exist emphasizes the importance of resisting their annihilation and promoting their continued growth and success. By building new digital communities and participating actively as citizens within these communities, we can ensure that an alternative to the commercial network exists.

One of the most organized digital communities is the Open Source community. The open source initiative and free software foundation head the free software movement, in which, contrary to the closed, proprietary model of software development used by capital, source

code is freely available to all users. The source code may be freely modified and distributed, as long as it is not used for commercial applications. The intellectual property of open source software is protected by the GNU GPL (General Public License). The Open Source movement is growing in popularity and presents a true alternative model of software development to that of capital. It embraces the open architecture of the Internet and is inherently democratic. The democratic elements of this movement make it a strong resistant force to commerce.

Open Source has actually produced its own operating system that is beginning to rival the Microsoft Windows monopoly. The Linux operating system is totally open source and is constantly updated and maintained by an army of volunteer programmers. With continued development, it could prove to be a true oppositional force to the Windows behemoth and perhaps help cement the future of open source and open networks.

In Chapter 6, I deal with those involved in illegal forms of resistance. The users in these communities challenge the legitimacy of capital's right to rule over digital space and, in some ways, over space in general. Just as it has done in the past, capital is colonizing the digital continent and forcing its own laws and practices upon the inhabitants. The legitimacy and relevance of the existing laws in cyberspace must be called into question. Intellectual property law and pay-per-services undermine the ideals that built the Internet, and rejecting the legitimacy of these laws will not make them disappear. If users want to challenge a commercial network focused on profit, it is obvious that a simple and effective way to do so is to use the openness of the Internet against it. By sustaining a

network of free services and information, they undermine the commercial viability of the pay-per-Internet. If enough users reject the imposition of a commercial model and embrace 'illegal' activities like downloading mp3 or warez they can render their commercial counterparts unprofitable and thus cause them to collapse.

The Internet is unique in that it allows users to practise such commercial disobedience (or as capital calls it "theft") in relative anonymity, without much fear of prosecution. It provides hope that if a full-scale commercial system fails, there may be room to renegotiate the organization of the system both in cyberspace and real space. For instance, if digital music fails to become profitable and manages to erode the profits of the industry in the real world, it could possibly trigger a renegotiation of the exploitive contracts within the music industry and the co-operative development of a feasible and equitable system of digital distribution. Together with alternative movements like Open Source, the possibility of invalidating the efforts of capital to commercialize the Net becomes more attainable.

The existence of piracy on the Internet shouldn't come as a surprise since file sharing is built into the architecture of cyberspace. Originally limited to commercial software, the popular conception of piracy has extended to include the copying and distribution of music, books, and movies (ironically, it is the explosion of bandwidth that has made digitizing and transferring these media practical). The explosion of P2P (Peer-to-peer) communities used for sharing files has led to the popularization of an activity that is technically illegal.

The most popular of all these communities is the group of P2P communities involved in music filesharing. Napster and Gnutella have forced the music industry to re-evaluate and attempt to revamp its business model in order to deal with these threats. The reorganization process is far from complete, but there is hope that these alternatives will result in a more equitable system. Napster has been targeted by the music industry and has been effectively shut down. Capital's goal is to rehabilitate the user base into a commerce-friendly version of Napster. Their strategy is not dissimilar to the strategy employed by Microsoft in its .NET initiative – switch from unit-based production to pay-per-use licensing.

Gnutella is a filesharing community that has the strength of true decentralization on its side. Where Napster had a central server to co-ordinate the various peer-to-peer connections, the Gnutella network has no central host and so is immune to attacks by capital. It takes one of the basic elements of the Internet and creates easy methods to connect users and allow them to share files.

Hacking and Piracy

On the Internet, pirated goods are known as “warez” (pronounced: wares) and the large warez community is arguably one of the oldest on the Internet. Its existence predates the popularization of the Internet and the World Wide Web in the 1990s, dating back to the days of the BBS (Bulletin Board System) and Echomail (a system of ‘e-mail’). It is difficult to know whether or not those involved in piracy are actually opposing the system

of commerce, engaging in juvenile disobedience, or simply ignoring its existence altogether. The system of ‘couriers’ and cracking groups that release pirated software is not simply a group of disorganized rogue pirates, but a highly organized, efficient, and resilient network of piracy. The sophistication of the piracy process and the high degree of collaboration involved makes it an interesting object of analysis. Within my analysis, the piracy network may prove to be the most illuminating example of both a culture and campaign of resistance in cyberspace.

The skills of pirate crackers are transferable from the realm of piracy into weapons in a campaign of resistance against capital. Turned against commerce, the relatively benign acts of pirates become a deliberate and direct attack against capital. Generally, there are not organized groups of crackers planning assaults on commerce. However, a website 2600.com is a meeting place and loose collective of hackers³. Hack attacks take a variety of forms, ranging from vandalism to a denial-of-service attack. Vandalism is simply the defacing of a (usually corporate) website in order to express dissatisfaction, whereas a denial-of-service attack is aimed at disabling a service altogether. In popular culture, hackers are often involved in stealing information electronically in order to further some state or corporate goal. In reality, the theft of information by hackers is usually for the purposes of fraud (credit card fraud, passwords etc.) and not a kind of resistance, but mere criminal activity. The hacker is a cyber-terrorist, using virtual-violence as a means of communication. The attacks are not made for personal gain (as in the case of criminal activity) but rather to further a political cause. Hackers/crackers are the most severe form

³ We will explore the usage of the terms “hacker” and “cracker” in Chapter 6. While the popular usage of “hacker” includes those who partake in these kinds of assaults on capital, it is actually a misnomer. The individuals who partake in these activities are more accurately described as “crackers”.

of resistance in cyberspace – their methods may be called into question just as the methods of those who wage bombing campaigns for political ends in real space.

Looking to the future

By the end of this analysis, a map of these communities should be laid out. The future of these communities, however, will still be in doubt. It may prove that the commercial Internet is too strong for these communities to resist and they may end up marginalized or extinct like their BBS forebears. What we discover is that sustaining these communities depends on participation within them more than on any war waged against commerce.

Too often, hope for the future rides on the success of technology. Technological solutions to problems do not address the root causes of the problems, they simply act on the symptoms of the problem. The decentralization of networks may provide increased opportunities for democracy, but can also be used as a tool of surveillance and control. Access to the wealth of knowledge on the Internet can enrich communities and create dialogue just as easily as it can be used to buy goods and services.

As we begin our investigation into these areas, we should remember to keep the idea of participation in mind – participation is the key to resistance. It does not necessarily entail throwing cyber-stones at digital windows but becoming an active member of a community. Perhaps more valuable than preserving cyberspaces from the invading armies of commerce is the cue we can take from cybercitizens to become more active in our real world communities in order to protect them from excessive commercialization.

Chapter 2: Literature Review

Introduction

The literature written about forms of digital resistance is extremely limited, yet there is a wealth of information regarding the invasion of capital into cyberspace. In this section, I will survey some relevant works that relate to our discussion of cyber-citizens and their resistance to commercialization. These works fall into two categories, those that deal exclusively with capitalist expansion, colonisation and exploitation (as is the case with Marx), and those that deal specifically with the Internet and its associated mythology and history.

By fusing these two kinds of analysis, we can form a picture of capital's course in cyberspace as well as expose its modus operandi and as a result be able to better understand the modes of resistance being employed currently, and perhaps even be able to propose new methods of resistance.

I will begin with a discussion of Marx's writings about capitalist expansion and the relationship between wage labour and capital. The digital commons is being renovated

from a public space into a privatized marketplace. Much like the geographic colonization undertaken by capital during the previous centuries, the colonization of cyberspace carries with it similar consequences and follows a remarkably similar course of events. What capital must do is implement its market system on a new continent and use it to drive the existing culture into submission. The current generation of netizens are the “barbarians” of past conquests. These “barbarians” need to be tamed as capital seeks to civilize the untamed Internet. Capital “compels all nations, on pain of extinction, to adopt the bourgeois mode of production; it compels them to introduce what it calls civilization into their midst” (Marx, 1976:71). The first step in establishing control over a new continent is to introduce the market system, either through economic competition that drives existing merchants out of business, or through violence. In the case of cyberspace, it seems that violence in the form of aggressive legal measures is the method of choice for capital since the warez⁴ that are being peddled by cyber-merchants are free, and so undercut anything that capital could possibly offer. The process by which capitalism gains a foothold and grows is what Marx calls “Primitive accumulation”.

Primitive accumulation on the Internet

Until the advent of the Internet, it seemed that all space had been colonized and expropriated by capital. However, the Internet created a new kind of ‘virtual space’ that once again began its existence as a common resource for users. Characterized as virtual spaces, peer-to-peer communities represent an excellent microcosm of the encroachment of capital into previously unowned spaces.

⁴ We will discuss warez in detail in Chapter 6.

The parallel between the expropriation of virtual space and the physical domains of the world is played out in Marx's discussion of primitive accumulation, which Marx calls the "point of departure" for capitalist accumulation (Marx, 1976:873). The clarity of this statement becomes crystalline when we consider the rapid commercialization of Internet services over the past decade. If the digital market is to become a haven for capitalist accumulation, it must first undergo the process of primitive accumulation. It must leave the security of its 'virtual eden', and stain itself with the original sin of primitive accumulation (Marx, 1976:873).

What constitutes primitive accumulation? Marx says "[s]o-called primitive accumulation, therefore, is nothing else than the historical process of divorcing the producer from the means of production" (Marx, 1976:875). In the case of the Internet, the process of primitive accumulation will manifest itself as a reduction in the ability of users to self-publish and freely exchange information. The immediate question surrounds the notion of how this lays the groundwork for capitalist accumulation given that these users are not performing obvious "work". Consider that these users are actually 'working' for themselves in that they are freely exchanging information, freely trading files, all over a common network uncontrolled by capital for the most part⁵. The process of primitive accumulation on the Internet would separate users from their communities. Users are then forced to pay for access to services, which would necessitate further work under the existing capitalist system. Systems would also be regulated by the owners and would not represent the community ethic of the original systems. Seizing ownership over digital

⁵ Capital does control the network at the level of ISPs, however in general, access is not restricted by ISPs.

communities and restricting access to them along with access to the digital means of production sets the stage for large-scale capitalist accumulation.

Much like the violent history of England detailed by Marx, the course being played out on the Internet is following a similarly violent path, although the violence is not physical. Lawsuits by large corporations can cripple tiny organizations into compliance with their will (as is the case with Napster). The lure of a captive audience of millions – a captive workforce – is alluring, and it contributes to the desire of capital to extend its grasp into the frontier of the Internet. Marx vividly relates the centrality of the loss of common property to the rise of capital:

The spoliation of the Church's property, the fraudulent alienation of the state domains, the theft of the common lands, the usurpation of feudal and clan property and its transformation into modern private property under circumstances of ruthless terrorism, all these things were just so many idyllic methods of primitive accumulation. They conquered the field for capitalist agriculture, incorporated the soil into capital, and created for the urban industries the necessary supplies of free and rightless proletarians (Marx, 1976:895).

The justification for striking back at Internet users and occupying their online communities lies partially in the notion of intellectual property. As property holders, capital believes it is exercising its right to control its intellectual property. However, in its quest to reclaim what it sees as the theft of its property it is taking more than it owns. In its bid to reclaim its stolen flock of sheep, it is taking the pasture as well.

The problem with this view of the situation is that it fails to factor in the unique status of information, bandwidth, and digital 'space'.

Digital space

Marx alludes to the notion of common lands, and the inherent competitive ideal of capitalism in his discussion of the expropriation of the common lands from the agricultural population (Marx, 1976:877-95). In a discussion of P2P (Peer-to-peer) “freeloading” which touches on the same issues of common land usage, Clay Shirky provides a concise description of the “Tragedy of the Commons”⁶ which is worthwhile quoting at length:

Imagine that in an area of farmland, the entire pasture is owned by a group of farmers who graze their sheep there. In this situation, it is in the farmers' best interest to maintain herds of moderate size in order to keep the pasture from being overgrazed. However, it is in the best interest of each farmer to increase the size of his herd as much as possible, because the shared pasture is a free resource.

Even worse, although each herdsman will recognize that all of them should forgo increases in the size of their herd if they are acting for the good of the group, they also recognize that every other farmer also has the same incentives to increase the size of their herds as well. In this scenario, each individual has it in their individual interest to take as much of the common resources as they can, in part because they can benefit themselves and in part because if they don't someone else will, even though doing so produces a bad outcome for the group as a whole.

The Tragedy of the Commons is a simple, compelling illustration of what can happen to commonly owned resources. It is also almost completely inapplicable to the digital world (Shirky, 2000).

I tend to agree with Shirky in his assessment of the inapplicability of this reasoning to digital systems. As cited by Shirky, and in computer science textbooks and mathematical theories on computation, bandwidth and CPU cycles are infinite over time. It is in the very nature of information that prevents it from being depleted when consumed. If I take a copy of an MP3, it in no way prevents someone else from taking another copy of that

⁶ The full text of the article “In Praise of Freeloaders” can be found at: http://www.openp2p.com/pub/a/p2p/2000/12/01/shirky_freeloading.html. Last accessed 12/08/2001.

same MP3. Additionally, if you do not use your bandwidth, it simply goes to waste – you cannot store it for future use⁷. The same applies for your processing power – if you are not using your CPU, there is no cost to you to keep it running at 100% usage rather than 1%.

So what does this have to do with capital? Capital seeks to abolish the common lands of the Internet and replace them with privately owned pay-per-use models. In our sphere of interest, this is best exemplified in the case of Napster.

Capital and Colonization

One of the recurring themes throughout Marx's *Capital* is the relationship between capital and colonization. The imperialistic tendencies of capital to require constant expansion and growth are evident in its recent invasion of the digital realm. In his discussion of Machinery and Large Scale Industry (Marx, 1976:492), Marx related how the mechanization of industry and the automation of labour result in an expansion of capital. The efficient automated processes of manufacturing allow colonial powers to undercut local merchants in faraway lands, and seize control of the market and the workers who work within the country. In *Cyber-Marx*, Nick Dyer-Witheford provides excellent insight into Marx's dealings with the issue of capital and colonization:

Marx in his time saw clearly how capitalism's compulsion to expand production and circulation drove it to successive geographic enlargements of a circuit that would eventually encircle the

⁷ We should note that users do pay for their bandwidth from their ISPs, and in some cases the bandwidth is charged per hour or per minute. In these cases, the illusion of 'free' bandwidth is cancelled. Only under unlimited access models is it not costly for users to share their bandwidth.

whole earth, leading to “the entanglement of all peoples in the net of the world market.” Observing the telegraphs, railways, and steamships of his age, he observed how capital “by its nature drives beyond every spatial barrier” so that “the creation of the physical conditions of exchange – of the means of communication and transport – the annihilation of space by time – becomes an extraordinary necessity for it” (Dyer-Witheford, 1999:130).

We can see how the commercialization of the Internet is an obvious goal for capital. By appropriating the means by which it can annihilate space with time, it can complete its system of exchange.

The parallels between the nineteenth century conquests of imperial England and the encroachment of capital into the P2P community on the Internet are evident. The colonization of the P2P space through mergers and acquisitions of companies like Napster or the appropriation of various Instant Messaging Applications by corporations like AOL or Microsoft lead the charge of capital into the P2P fray. However, unlike the traditional market where capital’s immense spending power and automated production processes can serve as a method to undercut competition and create dependence, it will be extremely difficult for capital to undercut *free* information and so the only alternative is control.

Instead of seeking to undercut their competition, they are attempting to outlaw their activities and replace their system with a near-equivalent that can be effectively controlled. Very recently, three of the largest music companies (EMI, AOL Time Warner, and Bertelsmann merged with RealNetworks (the makers of RealAudio player) in order

to develop a secure online music distribution community⁸. The service, titled “MusicNet,” will provide the entire catalogue of these companies on a subscription basis to users who wish to download digital music. The contrast between the open-model developed by users and the client-server model developed by capital is striking. Instead of a P2P, democratic system of communication in which information is freely exchanged without control or cost, capital is seeking a centralized, closely monitored and pay-per-use model that limits user freedom instead of broadening it.

The threat of free information exchange and open architecture to capital is quite severe. In reaction to this threat we see the same kind of repressive tendencies that were employed by capital in the middle-ages. The strong reaction of capital to the alleged threat to profits posed by the P2P community signals capital’s fear regarding the power of these communities to affect profits.

Bloody Legislation

“Edward VI: A statute of the first year of his reign, 1547, ordains that if anyone refuses to work, he shall be condemned as a slave to the person who has denounced him as an idler. The master shall feed his slave on bread and water, weak broth and such refuse meat as he thinks fit. He has the right to force him to do any work, no matter how disgusting, with whip and chains. If the slave is absent for a fortnight, he is condemned to slavery for life and is to be branded on forehead or back with the letter S; if he runs away three times, he is to be executed as a felon. The master can sell him, bequeath him, let him out on hire as a slave, just as he can any other personal chattel or cattle. If the slaves attempt anything against the masters, they are also to be executed” (Marx, 1976:897).

⁸ The story is available at: http://news.bbc.co.uk/1/hi/english/business/newsid_1256000/1256310.stm. Last accessed 12/08/2001.

“If we have to start knocking on doors and confiscating hard drives, then so be it” (Lars Ulrich, Drummer for Metallica speaking on BBC2’s Money Programme).

Recently the Taiwanese police in Taipei started raiding student dormitories searching for illegal MP3s on student hard drives. The students are being prosecuted to the fullest extent of the law as examples to others in order to curb the trading of copyrighted MP3 files⁹. Certainly the course of primitive accumulation on the Internet is not following the bloody history of its predecessors. However, the ferocity of the invasion and conversion of the virtual space into capitalist industry is no less fierce than the forcible enslavement of the working class in England during the fifteenth century.

Rather than forcing people into the slums and factories of the pre-industrial cities of England, the digital industrialization of the Internet forces users into the role of audience labourers and consumers where previously they were free to roam the digital commons. The infringement upon the rights of users is not considered by capital, and the rights of the profits of industry are the primary concern. When Marx discusses the legislation preventing the organization of workers against their masters, we can again see how the patterns of domination and subordination repeat even after hundreds of years of so-called “progress”:

‘Granting,’ says Le Chapelier, the *rapporteur* of the Committee on this law, [the law that forbids workers association and organization] ‘that wages ought to be a little higher than they are... that they ought to be high enough for him that receives them to be free from that state of absolute dependence which results from the lack of the necessities of life, and which is almost a state of slavery,’ granting this, the workers must nevertheless not be permitted to inform themselves about their own interests,

⁹ The full story is available here: <http://www.taipeitimes.com/news/2001/04/14/story/0000081624>. Last accessed 12/08/2001.

nor to act in common and thereby lessen their 'absolute dependence', 'which is almost a state of slavery', because by doing this they infringe 'the liberty of their former masters, who are the present *entrepreneurs*', and because a combination against the despotism of the former masters of the corporations is – guess what! – a restoration of the corporations abolished by the French constitution! (Marx, 1976:904).

The forced imposition of commerce into the cyberspace exploits the labour of users, and the prohibition of communities like P2P is not strikingly different than prevention of labour organization. The organization of large numbers of people in a position contrary to that of capital poses a threat to the power wielded by the corporations.

What capital seeks to do through its "bloody legislation" is not simply to prohibit these communities, but also to seize control of them and use them not just to protect their profits and to further extract surplus value from both the users of the communities and the artists whose wares are traded within these communities.

The Seeds of Destruction?

In his discussion of capitalist accumulation, Marx manages to expose not just the operating methods of capital but the contradictions that lie in the basic premises of capitalism. It is through exploitation of these weaknesses that those who practice resistance might gain ground on the digital battlefield. The recurring crises of capitalism that Marx describes may very well bring about its eventual demise, but a few well placed shots that take advantage of the inherent unbalance in the capitalist system of

accumulation may be able to keep the invading hordes of commerce at bay, and with a little luck, trigger what Marx describes as a crisis of capitalism.

As digital citizens, people are interested in creating a responsible and active digital community that is open and democratic. The current infrastructure on the Internet supports such communities, but commerce threatens to erase that culture and replace it with its new structures of control. The general mythology of the free-market and “trickle down” economics is the driving force behind the network reform in which the captains of industry promise a bigger, better, faster Internet. The promise of universal access for every person on the planet – a completely wired world – will solve world hunger, stamp out poverty, even do your grocery shopping for you. The philosophy guiding the capitalist takeover of cyberspace and its expansion into every corner of the globe is the same logic that governs international trade agreements. Marx explains the role that workers and citizens take in this grand plan:

To say that the worker has an interest in the rapid growth of capital is only to say that the more rapidly the worker increases the wealth of others, the richer will be the crumbs that fall to him, the greater is the number of workers that can be employed and called into existence, the more can the mass of slaves dependent on capital be increased (Marx, 1891:211).

Commercialization of the Internet is not so much an upgrade project as a total revisioning. It will take a network designed for openness, redesign it into a controlled access system of exchange and begin attracting a new class of bourgeois users interested solely in utilizing it as a medium of financial exchange.

While it may in fact be true that a redesigned commercial network may be faster and more reliable, the minor benefits to users (i.e. the ability to watch video-on-demand) are far outweighed by the cost of losing the democratic space that may represent the last continent untouched by capital. Marx highlights the disparity between the working class and capital in the following passage:

Even the most favourable situation for the working class, the most rapid possible growth of capital, however much it may improve the material existence of the worker, does not remove the antagonism between his interests and the interests of the bourgeoisie, the interests of the capitalists. Profit and wages remain as before in inverse proportion.

If capital is growing rapidly, wages may rise; the profit of capital rises incomparably more rapidly. The material position of the worker has improved, but at the cost of his social position. The social gulf that divides him from the capitalist has widened (Marx, 1891:211).

The disparity between wages and the profits of capital is one of the internal contradictions of capitalism that lays the foundations for a targeted resistance to commercialization. Just as trade unions strike in order to garner higher wages, the users of the Internet may find it possible to 'strike' in a manner in order to have their demands for the preservation of an open network met. What capital seems to forget is that the tenets of maximizing profits (partly through minimizing wages) and unbridled competition (among both capitalists and workers) hold the fate of capitalism firmly in their grasp. The increased competitions among workers and capitalists leads to thinner profit margins and lower wages as capitalists seek to edge each other out of the market (Marx, 1891:214-15). As we will see throughout the course of this analysis, the roots of capital's digital demise may lie in the Open Source Initiative that can offer the same services as capital for free. Marx hits the nail on the head when he says, "If the whole class of wage-worker were to be abolished owing to machinery, how dreadful that would

be for capital which, without wage labour, ceases to be capital!” (Marx, 1891:215). We might interpret this in the light of digital technologies to indicate that open source and open communities may be able to undermine the commercial viability of capital’s digital enterprise, thereby retaining their grasp on cyberspace.

Modern Perspectives on Marxism

Marx put great faith in the ability of workers to unite in order to overthrow the capitalist threat, and his hope is mirrored in many of the modern technology theorists who paint a very utopian picture of the Internet and its potential to overthrow the capitalist empire. In *Rich Media, Poor Democracy*, Robert McChesney outlines the perceived course of events:

The Internet, the argument goes, holds the potential to undermine corporate and commercial control of media. If everything is in the process of becoming digital, if anyone can produce a website at minimal cost, and if it can be accessed worldwide via the World Wide Web, it is only a matter of time (e.g., expansion of bandwidth, improvement of software) before the media giants find themselves swamped by countless high-quality competitors. Their monopolies will be crushed (McChesney, 1999:120).

McChesney’s scepticism is evident early on in his writing. As capital pushes further into cyberspace unchallenged it seems that theorists are beginning to lose some of their wide-eyed enthusiasm for the alleged democratic powers of the Internet. McChesney explains that corporate control over communication technologies has a long history and that the Internet is no different than FM radio or television (McChesney, 1999:126). He maintains that the early commercial foothold resulted in a commercial based system becoming entrenched and that only later did the government attempt to “carve out a nonprofit sector

on the margins. This was problematic, since whenever these non-profit niches were seen as blocking profitable expansion, their future was on thin ice” (McChesney, 1999:126). He concludes that the role of nonprofit technologies (as the Internet was up until the mid-90s) “has been to pioneer the new technologies when they are not yet seen as profitable – e.g., AM radio in the 1920s, FM radio and UHF television in the 1950s – and then to be pushed aside once they have shown the commercial interests the potential of the new media” (McChesney, 1999:126). McChesney concludes by noting that the network infrastructure of the Internet has already been turned over to private hands – the content and culture is without a doubt the next target.

Users who wish to oppose the commercialization of the Internet might choose to heed what McChesney calls the ‘key-factor’ in avoiding the inevitable commercial destiny of communication technologies: “*The key factor is to exercise public participation before an unplanned commercial system becomes entrenched*” (McChesney, 1999:127). Both Marx and McChesney point to organized resistance as a key element in successfully opposing capital, however, as we will see in future pages, the resistance to capital is loosely organized at best and generally anarchic.

The impetus to act now rather than later is strong. If users wait too long before undertaking a campaign of resistance, it may already be too late. McChesney cannot stress the importance of preventing the entrenchment of a commercial system enough:

The goal of the corporate sector is unambiguous; it wants to entrench a commercial system before there is any possibility of public participation. Once such a system is entrenched, regulatory codes can then be enacted to lock it in for all time. This is entirely contrary to the democratic notion of public determination of policy *before* a commercial system gets entrenched. Once a

communication system is established, and has powerful lobbies behind it, the difficulty in changing it through public policy increases exponentially (McChesney, 1999:128-9).

An ounce of prevention is certainly worth a pound of cure in this case. McChesney is advocating a traditional route for lobbying for change. However, we may question the effectiveness of traditional lobbies given the lack of regulation of the Internet. It may already be too late. Commerce has already taken to pronouncing ownership over cyberspace. McChesney quotes from the *Economist* on the topic of cyber-governance and regulation. "When Cyberia was a small, academic country, such an informal arrangement worked well. But now it has been colonised by commerce, a more businesslike approach is felt to be necessary" (McChesney, 1999:130).

Capital has taken it upon itself to set up a government in cyberspace to tame the "savages". Capital seems to hold a view that its position is a missionary one, where the motives and effects of colonization are not questioned. However, users on the Internet who have built a digital culture and are facing cultural extinction at the hands of cyber-mega-malls are questioning these motives.

Pockets of Resistance

Throughout the process of commercialization, the governments of the world have lain silent and have even collaborated with capital in order to accelerate the process of commercialization on the Internet. Without help from the state, citizens are left to take matters into their own hands. McChesney recognizes that "the only stratum that could

provide organized opposition to the privatization of the Internet and to the elimination of any public debate concerning the Internet would have to come from the ‘user’ community, those who helped build up the non-commercial Net culture of the late ‘80s and early ‘90s” (McChesney, 1999:130-1). This non-commercial Net culture that was built by these users is the same culture that faces extinction if the commercialization project is completed.

These users can use the rich online culture they built in order to wage a battle against capital. They can use the open communication networks and the information-sharing ideology to pass information, sway public opinion, and perhaps even manage to hold their ground. In a way, it is time for the digerati to put all their utopian musings about the revolutionary power of the Internet to the test. If the Internet cannot resist the attempt to commercialize its architecture and content, then perhaps its revolutionary potential was vastly overestimated.

Even sceptics can see the potential for the Internet as a tool of resistance in the struggle against capitalism. While the Net may ultimately fail to live up to its potential as a revolutionary medium, it can still play an important role in implementing and sustaining democratic control of cyberspace:

“From Mexico to China,” the British *Guardian* noted in December 1998, “the Internet is proving an invaluable tool for acts of political defiance, large and small, as governments wedded to traditional media find it hard to quell political dissent channelled through cyberspace.” When the Internet is viewed in this manner, it is hard not to see it as constituting the basis for a genuine revolution in information dissemination with striking and world historical implications for politics. This is the Internet that has enthralled the Tofflers and Negropontees and Gilders – the utopian

futurologists – for the past decade. The strength of this vision is that it has an important element of truth (McChesney, 1999:176).

We can see that even the sceptical are beginning to recognize the revolutionary potential of the Internet. However, most of the writing around the use of the Net as a tool of resistance and dissent surrounds real-world politics. There is little to nothing written about digital resistance to capital. Perhaps the more technical aspects of digital resistance erect a barrier between public discourse on the subject and those that employ these methods. Until very recently computers were almost the exclusive domain of hackers and programmers, and the public regarded them as cryptic boxes that were best left to the experts. In the past decade, public perception of computers has changed drastically. Discussions of technical standards, technologies and electronic life have become part of the public discourse. The digerati may be advised to take advantage of the public's interest in cyberspace and its trappings and use that to rally support to the cause of protecting the open Internet.

Many of the social stigmas attached to belonging to an online community have also been erased. Previously, those who spent their time in online chat rooms, MUDs (Multi-User Dungeons), or playing online video games were regarded as socially dysfunctional 'nerds' who lacked the social skills to succeed in real world relations and so had to resort to computers. Today, participation in all of these activities is common and the cyber-fanatics rave about the virtues of virtual communities. The praise and potential of cyberspace is certainly not without hyperbole. Proponents explain that not only do these communities offer refuge from the capitalist grind, they represent a utopian model of society and a means by which to overthrow capital:

However, in many cases participants see such communities as offering escape from the everyday logic of capital. In some cases, they are consciously conceived as constituting a new, electronic form of civil society in which many-to-many cyber-communications undermines the control of established societal gatekeepers – including giant media corporations – over flows of information. Among libertarian technophiles these prospects sometimes inspire a populist version of technologically determinist information-revolution theory, with computer networks being seen as the solvent that will spontaneously melt the hierarchies of capital into participatory democracy (McChesney, 1999:124).

We should take these sentiments with a grain of salt given the extreme resiliency of capital to resistance. Frank Webster and Kevin Robins criticize much of this cyber-communitarianism as being nostalgic for some sort of return to the antiquated town square/village pump model of society (Webster, 1999:230). They say, “It seems as if there is a strange affinity between virtual futurism and communitarian nostalgia” (Webster, 1999:243). The nostalgia for a simple social organization would correspond to the desire for escape from the world of capital. Rather than confronting the problems facing virtual culture and its citizens, it seeks to sequester itself in digital obscurity, hoping that capital will pass it by without pillaging their quaint culture. “Virtual culture is a culture of retreat from the world” (Webster, 1999:245). Webster and Robins argue that Netizens are fooling themselves. In order to truly forge an alternative, they must confront these problems head on, and perhaps confront capital directly in a struggle that may result in their ultimate defeat. In its current form, virtual culture lacks the kind of citizen participation needed to lead a revolution:

Our problem is, rather, with the kind of social space or spaces that the new technologies are bringing into existence – this comfortable space of collaboration, dialogue, understanding, intimacy, reciprocity, and so on. Informed as it is by a sensible imagination of mutuality and consensus, we regard it as a banal space. The new virtual space is a pacified space...It is an illusory space (Webster, 1999:239).

As a world of escape, virtual culture is so different from the real world that it evokes complacency among its citizens. People in each community are bound by their common interests, but hobbies and interests are not enough to forge strong social bonds between people, they need to exercise their full personalities and beliefs in order to create 'real' communities in which actual people inhabit. "Sivanandan is right, the virtual community 'is a community of interests, not of people' (and 'you need people to make a revolution', he adds)" (Webster, 1999:232).

While Webster and Robins do hold a degree of contempt for the sentimentality involved in the virtual communitarian movement, their primary target is technology. They maintain that the technological determinist view that network technology alone will facilitate the overthrow of capitalist structures is naïve (Webster, 1999:247). The technology itself is not inherently 'good' in the sense that the mere existence of these communities will facilitate the demise of capitalism. As with anything in the real world, digital democracy requires participation by its citizens, and in cases where their freedom as citizens is threatened, it requires resistance and violence in order to halt the invasion.

The inherent democratic nature of networks is often taken for granted in discussions surrounding the Internet. The rhetoric of democracy is used on both sides of the conflict, and an essentialist view of the matters can cloud perception and encourage simple-minded solutions to problems that are extremely complex. The problems facing cyber-citizens are not new, but rather they are simply at a point in the virtual history when it is actually effective and possible to oppose capital's monopoly on power. However,

contrary to the preachings of the digerati, resistance to commerce does not guarantee success. It seems that:

For every argument extolling the “virtual community” and the liberating aspects of cyberspace, it seems every bit as plausible to reach dystopian, or at least troubling, conclusions. Is it really so wonderful or necessary to be attached to a communications network at all times? Is sitting in front of a computer or digital television for hours per day really such a great thing for humans to do, even if it is “interactive”? Why not look at the information highway as a process that encourages the isolation, atomization, and marginalization of people in society? One controversial and hotly debated study at Carnegie-Mellon University in 1998 reached precisely these conclusions. In fact, cannot the ability of people to create their own “community” in cyberspace have the effect of terminating a community in the general sense? (McChesney, 1999:145-6).

It is important not to get caught up in the hype surrounding virtual communities and the power of the Internet to revolutionize the world. What the digital struggle represents is an important model for organization, a fertile testing ground, and safe-space in which oppose capital. The Net is a technology of equalization that does give ordinary users, equipped with the right knowledge, the power to successfully oppose capital. The Internet is a tool that can help make life in the real world better, but virtual culture is not a substitute for real life and a wholesale retreat from the real world into the ‘illusory’ world of virtual culture would certainly ensure the unravelling of the social fabric in the real world. We need to balance the enthusiasm for new hope brought by the Internet with the needs of civil society in the real world. We can recognize that cyberspace is a space worth defending without abandoning our defence and maintenance of our communities outside of cyberspace. If anything, we should harness the hope of cyberspace and use it as a catalyst to trigger change within our real world communities.

Theorizing hacking

The philosophy that pervades the communities on the net, especially the open source community, is that of the “hacker code of conduct”, or as Pekka Himanen calls it, “the hacker ethic” (Himanen, 2001). Himanen poses this new “work ethic” in opposition to the traditional “protestant work ethic” (as described by Max Weber in *The Protestant Ethic and the Spirit of Capitalism*). The “hacker ethic” places a higher priority on the intrinsic rewards involved in work – hackers write code because they find it inherently interesting and rewarding. This view of work stands in opposition to what Himanen calls the “monastic” view. He proposes an allegory based on Eric Raymond’s “Cathedral and the Bazaar” (Raymond, 2000a). Himanen alters it slightly by describing the hacker work model as the “academy and the monastery” (Himanen, 2001). Rather than viewing work as a duty that should not be questioned (as it would be viewed in a monastery), he explains that hackers approach work similar to the academy. Discovery, truth, and excellence are driving forces, and work is subject to peer review and open testing and critique. What Himanen tries to get across is that hacking is a *joyful* activity, rather than the drudgery associated with capitalist employment. Rather than the “cheerful robots” of the capitalist middle class, hackers fall into what C. Wright Mills would call “craftsmen” (Mills, 1956:220). For the hacker craftsmen, “[t]here is no split of work and play, or work and culture. The craftsman’s way of livelihood determines and infuses his entire mode of living” (Mills 1956:220). Rather than focused on profit like those involved in the cathedral model of software development, for hackers “[t]here is no ulterior motive in work other than the product being made and processes of its creation” (Mills 1956:220).

The Internet is a crucial element contributing to this model of work organization and development. While individuals can practice the *spirit* of hacking without access to the Internet, it becomes impossible for them to realize the potential of hacking without access to the Internet and a community of developers. As Lessig notes in *Code*, “GNU was a bit ahead of its time. In the world before easy Internet access, it was hard to coordinate a major project, such as developing an operating system” (Lessig, 1999:104). Lessig highlights the importance of the Internet to open source development – and arguably to the spread of the “hacker ethic”.

However, what Lessig picks up on in both his 1999 book *Code: And Other Laws of Cyberspace*, and his 2001 book *The Future of Ideas: The Fate of the Commons in a Connected World* is the threat by commerce and government to the open Internet that is vital to innovation. Government is often the ally of commerce, and Lessig warns that we should not put too much faith in open code or underestimate the power of government to enact legislation to impede openness. He says, “[e]ven with open code, if the government threatens punishments that are severe enough, it will induce a certain compliance. And even with open code, the techniques of identity, tied to code that has been certified as compliant, will still give government plenty of power” (Lessig, 1999:108). We will see those techniques of identity appear in the authentication model proposed by Microsoft’s .NET standard.

We can begin to identify an emerging theory that openness breeds innovation, and that the intensification of commercial activity on the Internet (which does not favour

openness) poses a threat to what Lessig terms the “innovation commons” (Lessig, 2001). Open architecture on the Internet is largely responsible for its widespread popularity. As Lessig notes, “HTML [Hyper-Text Markup Language] became as popular as it did primarily because it was so easy to copy” (Lessig, 1999:103). We can extend this feature of availability and “freeness” to one of our major subjects of analysis: piracy.

The Sony Playstation is the most popular game console in history¹⁰. Given that it was Sony’s first attempt at a home game console, it is surprising that it would surpass entrenched competitors like Nintendo and Sega. However, unlike these systems, the Playstation is modifiable with a “mod-chip” that allows users to play burned games on their console. Because gamers can play hundreds of games with their console (for the cost of a blank CD-R), the Playstation is more attractive than its cartridge based counterparts. Contrary to the claims that piracy costs the computer industry billions every year, it is arguable that piracy actually helps the industry in some ways. In the same way that programs like Napster can broaden audiences for artists by reaching new fans that would have never bought their albums previously, piracy can train users on applications and create loyal users of applications. In his article “Yo-Ho-Ho and a Server of Warez”, David Tetzlaff quotes Michael Surkan,

It’s long been one of the computer industry’s best-kept secrets that not all piracy is bad. To gain market share, it’s useful to have as many people as possible understand your software....I’ve heard of large (very large) companies uploading applications to pirate bulletin boards in Third World countries to help gain market penetration (Tetzlaff, 2000:110).

¹⁰ This Forbes.com article lists Sony’s Playstation as the most popular console. Available online at: <http://www.forbes.com/2001/04/02/0402nintendo.html>. Last accessed: 12/08/2001.

What we see is that pirates, like hackers, hold a philosophy and adhere to a code of conduct that is not dissimilar from the hacker ethic. When we examine pirating communities in Chapter 6, we will see that these groups are not always overtly anti-commercial, however “many warez pirates, perhaps even most of them, hold to the idea that everything on the Internet ought to be free. That is, they advance some form of libertarianism, anarcho-syndicalism, or even socialism applied to computing, data processing, and information exchange (though not necessarily to ‘real life’)” (Tetzlaff, 2000:113). Like hackers working for the intrinsic rewards of programming, pirates operate within a system where “leeching¹¹” is discouraged and “the more you contribute to the general welfare, the better the subculture allows you to feel about yourself” (Tetzlaff, 2000:113). We will discover that similar philosophies unite all the cultures of resistance that are presented in this analysis. The ethics and architectures of online resistance cultures differ from those of capital, and so they find themselves in conflict with commercial interests that seek to close cyberspace.

Architectural digest

It can be somewhat surprising that out of the same architecture and rhetoric, two such opposing views of a technology can emerge. Consistently, there are viewpoints that point to two distinct paths that the digital future could follow – that of totalitarian control, or of flourishing democracy. In an incredibly visionary moment, Marx describes the system of the Internet and these two possible outcomes:

¹¹ Leeching is the act of downloading many programs without uploading anything in return.

Marx believed this creation of “intercourse in every direction, universal inter-dependence of all nations,” had both exploitative and emancipatory aspects. On the one hand, the “immensely facilitated means of communication” provided the means by which capital imposed its logic worldwide. It “compels all nations, on pain of extinction, to adopt the bourgeois mode of production; compels them to introduce what it calls civilisation into their midst, i.e., to become bourgeois themselves.” But simultaneously, this process created the conditions for the success of revolutionary proletarian movements, movements that depended on the “ever-expanding union of the workers”: “This union is helped by the improved means of communication that are created by modern industry and that place workers of different localities in contact with one another. It was just this contact that was needed to centralise the numerous local struggles, all of the same character, into one national struggle between classes” (Dyer-Witheford, 1999:131).

This battle between the emancipatory and the exploitative is the struggle in which the Net is currently engaged. Clearly, capital wishes to colonize cyberspace in order to complete its global system of exchange and control, however, both digital resistance and real-world resistance have taken this tool and used it to further their causes. The unification of local struggles into a single oppositional movement to capital was Marx’s dream (“Working men of all countries, unite!”) and this kind of organization mirrors the architecture of the Internet that the digital dissenters are trying to defend. Consisting of many nodes that combine to form a single whole, none more powerful than another, it is a structure that resists division and allows unification without needing ratification of every issue. However, we must be wary of capital’s drive to centralize control (as we will see in our examination of Microsoft’s drive to develop new Web Standards). The alternative to the distributed network is the tentacled network in which a central power controls the operations of the Net, and the nodes function as tentacles of the giant capitalist beast. In the opening pages of *Digital Capitalism*, Dan Schiller points to the increasing trend towards centralization of control in digital systems:

I argue that we should be skeptics about the potential of cyberspace. Knowledge carried through the Internet is no less shaped by social forces than it is elsewhere. Far from delivering us into a high-tech Eden, in fact, cyberspace itself is being rapidly colonized by the familiar workings of the market system. Across their breadth and depth, computer networks link with existing capitalism to massively broaden the effective reach of the marketplace. Indeed, the Internet comprises nothing less than the central production and control apparatus of an increasingly supranational market system (Schiller, 1999:xiv).

In order to force the existing market system onto cyberspace, we are seeing the development of digital architectures of control. The system was originally designed for maximum interaction between different systems and resource sharing, however the Internet is increasingly headed towards global standards and homogeneity so as to simplify use for the new breed of user they are creating. In his book *Code*, Lawrence Lessig details many of the new “laws of cyberspace” that are being developed to support commerce on the Net. Rights management systems are being put in place (they are integrated into the next release of Windows) in order to govern what individual users are allowed to access. It also provides a method by which to deliver licensed content and regulate online transactions. What it does is reproduce a class system on the Internet. It brings class struggle to the Internet, and fundamentally opposes the intentions of the creators of the Internet. It is to the issue of architectures and infrastructures that we now turn.

Chapter 3: The Nature of Networks

Neither the appearance nor disappearance of [the Internet] revolution is difficult to understand. The difficulty is in accepting the lessons of the Internet's evolution. The Internet was born in the United States, but its success grew out of notions that seem far from the modern American ideals of property and the market. Americans are captivated by the idea, as explained by Yale Law School professor Carol Rose, that the world is best managed "when divided among private owners" and when the market perfectly regulates those divided resources. But the Internet took off precisely because core resources were not "divided among private owners." Instead, the core resources of the Internet were left in a "commons." It was this commons that engendered the extraordinary innovation that the Internet has seen. It is the enclosure of this commons that will bring about the Internet's demise. – Lawrence Lessig, "The Internet Under Siege" Foreign Policy, 2001

Introduction

In this chapter, I will examine the infrastructures of the Internet and how they relate to commerce, openness, and resistance. Within cyberspace, there are two types of infrastructure, the physical network consisting of cables, routers and computer hardware, and the software and firmware that allows them to operate. Resistance to commercialization of the infrastructure of the Internet attacks not just the software of the Internet (this is what pirates, hackers, and crackers target) but also the physical nature of the Internet. The origins of the Internet as a decentralized system of interconnected nodes, the system of interlinked Bulletin Board Systems, and the prospect of wireless Peer-to-Peer (P2P) networks pose a distinct threat to the companies that profit from privately owned network backbones and centralized servers.

What makes the Internet more than simply a network is its interconnectedness. It is a series of interlinked networks, a conglomeration of smaller local communities that

combine to create a larger global community. This model of many points combining and contributing to a massive distributed network forms something distinctly different from simply a large number of users tapping into a giant information feed. The Internet is not interactive television. However, this is how commerce would like to see it developed. What we will see developing is a conflict between openness and closedness - between the free exchange of information and ideas and the purchase of digital services. We might even categorize the case of cyber-commercialization as part of a larger trend towards privatization that we see everywhere in society. What interests us for the purposes of this analysis are the actions of the inhabitants of cyberspace in resisting this transformation of their space.

Before we can look at the resistance to commercialization, we need to first examine the structures of commerce and the culture that our digital dissenters come from. In the early days of the Internet, which at that time was called the ARPANET, there was little to 'do' on the Internet. It was little more than an experiment in packet-switching (Abbate, 1999). Over the coming decades, a community of university researchers, graduate students, engineers, and avid users developed the core applications that arguably still form the basis for all current Internet applications. Abbate describes the central role that the user community played in developing the foundations of the Internet:

Historians have begun to call attention to the role of users in determining the features and ultimate success of a technology. Typically, users are portrayed as consumers acting through the market, choosing one product or service over another. Occasionally, they are portrayed as concerned citizens pressing for regulations (e.g., safety standards). In any case, it is generally assumed that users become involved only after a technology has already been developed. But the ARPANET's ultimate "consumers" – the researchers who were to use it in their work – were directly involved in its development (Abbate, 1999:83).

As we will see, user ownership and development lie at the core of many of the resistance cultures. In the case of the open source movement, user development of software forms the very core of the community. In contrast to commercially developed services and applications, which are constructed away from the user base that actually uses the product, user created solutions embody the most pressing needs and desires of the user community. While discussing the role of users in the development process, Janet Abbate says that “[i]t was, arguably, these activities that accounted for the perceived success of the system by ensuring that the ARPANET provided the types of services that users actually wanted” (Abbate, 1999:83). We might extend this concept to include the success of the Internet and the World Wide Web. These networks are successful because they were built by users to address the interests of the people who were actually using the network. Capitalizing on the success of these applications¹², corporate interests are attempting to redefine how the Internet operates. These applications will cease to be user-controlled and designed, and the dominant focus of the Internet will shift from information sharing to information distribution.

¹² Both Microsoft and AOL provide their own versions of instant messaging applications, e-mail services, and web site hosting. Record companies are attempting to design their own Napster-like file sharing system to distribute their music.

Distribution vs. Concentration

One of the concepts that lies at the heart of the conflict between open and closed architectures is that of centralization. How access to information is organized plays a vital role in establishing the nature of the network and the conditions of the virtual space. A centralized model puts the power and control in the hands of a few select individuals, whereas a decentralized or distributed model distributes the control and information relatively equally amongst all members of the network. Obviously, the model best suited for profit-making is the centralized model in which business can control access to a resource and hence charge money for access to that resource. The distributed model, which offers effectively no control over resources by a central authority, is not conducive to traditional business models and consequently not a particularly attractive option to commerce.

So, if you are a business, how do you create a situation of control in order to exact profits from the populace? There are a number of ways to do this, including closing architectures, gatekeeping, restructuring, and regulation.

Closing architecture (source code, protocols, hardware standards, etc.) is a highly effective method by which commerce can exact control over the masses. By closing the standards to protocols, application programming interfaces (APIs) and other key infrastructure elements, they prevent users from developing their own competing applications and consequently maintain their control over an industry.

Closing code is a common practice that has formed the basis of the software industry for decades. By preventing access to source code, developers make it more difficult for people to develop competing products, and copy their software. However, as we will see in later chapters, open source development has gained popularity, posing a threat to this business model. In addition, a healthy pirate network also undermines the viability of closed-code commercial software.

Gatekeeping is another common practice that businesses adopt to make money. All Internet Service Providers (ISPs) are in the business of gatekeeping. They act as gateways to the Internet, funnelling data to and from the user through their servers. This is a convenient solution for both businesses and users alike; businesses have a consistent revenue source by providing a service to users, and users have a simple and easy way in which to get connected to the Internet. While technically it is possible for individual users to get their Internet access from someone other than an ISP, it isn't feasible for the average user and not available in all areas.

Restructuring is the process that we might argue the Internet is currently undergoing. It is undergoing a transition from a decentralized set of interconnected networks into a giant broadcast backbone that allows many nodes to tap into its data stream. The points of access and data routes change from many-to-many into one-to-many arrangements. Large ISPs, dominant websites, and giant software manufacturers become the primary disseminators of content under such a model. If we use recent media mergers¹³ as a model, ISPs are combined with media and content providers as well as network owners –

¹³ For example, the BCE/CTV/Globe and Mail merger.

creating a super-entity that essentially provides a digital on-demand broadcasting service. This stands in stark contrast to the system of small networks connected to others via a common protocol set (TCP/IP). In this system, power resided in many points, both in terms of controlling content and routing data. Because there was no worldwide fibre network, data transmissions had to pass through numerous networks to reach their final destination, each one reliant on the other for the operation of the network. Multiple connections between networks ensured that a single bottleneck could not destroy the viability of the network.

Modern networks risk undermining not just the resiliency of the original network, but the principles that it was founded upon. As Lawrence Lessig points out in his article “The Internet Under Siege”, the end-to-end design of the Internet plays a role in both stabilizing the network and fostering innovation and creativity on the Internet (Lessig, 2001). What an “end-to-end” design means is that the “intelligence” resides outside the network. Servers and clients drive the applications, authentication and content. The network is an extremely simple, standard open protocol that allows maximum connectivity. Lessig describes this kind of design as more “humble” than other kinds of network design since it does not presuppose to know what the network will be used for, hence giving it maximum versatility. A more restrictive network design may offer more control for those in charge of content, but allows less room for innovation. What seems to be forgotten in the rush to commercialize cyberspace is that the original form of the network played a critical role in its development and its success – simply paving over its

open origins will not guarantee continued success and may undermine its viability completely.

Network Structures

The structure and nature of networks varies greatly across the many varieties of networks that have emerged. Many have adapted specific organizations to suit their specific tasks, and many have evolved into their current forms due to external circumstances and limitations. An examination of the various forms and characteristics of networks will reveal the fundamental differences between the networks of resistance and the networks of commerce.

Networks of Resistance

If there is a single characteristic that networks of resistance share, it is that they are built from the ground up by users. Many of these networks are P2P or in the case of pirate networks, they operate as relay networks. What these networks lack is a central authority that dictates the operations of these networks. Because they are often anarchic, it is difficult to classify these digital dissidents as engaging in campaigns of resistance against capital. It is more accurate to describe their activities as cultures of resistance, with campaigns against commerce being the exception rather than the rule.

What the Internet began as was a system of interconnected networks. What commerce is trying to do is transform it into a giant interactive digital broadband broadcast medium. It would be the perfect marriage of entertainment and commerce, bringing advertisers and

viewers together in an even more intimate relationship. However, what we see developing on the Internet are networks within networks. We see the rise of alternatives to the mainstream Internet that ignores the nature of the network and embraces old technological forms and simply updates them for the interactive experience. Alternatives to the mainstream Internet arise in the form of file sharing networks, open source development communities, gaming communities, web rings, pirating communities, and hacking communities. There is a vibrant alternative to the commercial default and we will explore some of these alternatives over the course of this analysis.

Co-ordinating Open Source

Open source development (discussed in detail in Chapter 5) rests on the notion of open code. Many independent programmers collaborate to create software that has no ‘owners’ in the traditional sense of the word. It is a highly democratic activity, but the idea of many programmers acting independently to develop a piece of code sounds more like anarchy. Interestingly enough, a small dose of centralized planning and organization allows the process to run smoothly. A Revision Control System (RCS) is a piece of software that tracks changes to a program and who is currently working on a section of a program (two people working simultaneously on a program would cancel each other’s changes). This program automates the process of “checking in” and “checking out” software and tracks the updates so that an accurate record of the changes can be maintained. This prevents users from duplicating or erasing each other’s work and allows a project leader to manage a product’s development by automating the cataloguing of possibly hundreds of pieces of code.

Modular design and object oriented programming techniques also allow for open source development to occur. Modern programming techniques separate programs by functionality and characteristic. For instance, all windows in a program are variations of a basic window type. So, if someone makes a change to the basic window type, it propagates throughout the project without the need for every individual programmer to alter his or her code. This also allows extremely large projects to be broken down into manageable tasks for a single programmer¹⁴. For example, a large operating system may be broken down into basic components (disk access, device drivers, input control, etc.) and tasked out to many programmers. The extreme decentralization of open source development speeds up the development process greatly over its closed code counterparts. A small dose of centralized planning and co-ordination in this case creates greater efficiency in a decentralized network.

File Sharing

The file sharing networks that have arisen on the Internet seem to embrace the true potential of the network in a way that no other application has managed to do. They provide totally peer-to-peer environments in which users exchange information directly between each other. Their degrees of decentralization vary, but since the demise of Napster the explosion of Gnutella-based file sharing applications have kept these communities alive. The details of file sharing networks will be discussed in detail later,

¹⁴ This is especially important in open source development since programmers are often not paid for their work and so a particularly large project may not be finished by a volunteer programmer, whereas a small module is easily completed.

but for the purposes of our current discussion, the most important aspect to keep in mind is the total decentralization that the most recent networks embrace.

Decentralization makes networks extremely resilient. Without a centralized server to target, there is no way to dismantle a decentralized network. Napster was easily targeted because its central server maintained a database of songs. Because these file sharing networks utilize standard protocols, their traffic is difficult to identify and block. Trading MP3s is indistinguishable from browsing a website or watching a video clip. Resilience in a network of resistance is important because it is likely that it will be attacked by those, like government¹⁵ and business, who see it as a threat.

Decentralized networks are not a phenomenon limited just to the Internet. Bulletin Board Systems that rose to popularity in the 1980s held many of the same characteristics that exist in modern file sharing networks. The echomail system that was extremely popular before the rise of the Internet models the operation of the Internet and of the decentralized file sharing systems that pose such a threat to digital commerce. What BBSes retain, and what the Internet lacks, is a sense of locality – a focus that pertains specifically to your particular geographic area.

¹⁵ Since the September 11th terrorist attacks, governments have become increasingly involved in regulation on the Internet. Both Bill C-36 in Canada, and the USA Act (Section 815) in the United States address the issue of the use of the Internet for terrorist activities.

Bulletin Board Systems

Long before the Internet rose to popularity in the mid-1990s people had been interacting with each other in an online environment. They were able to send messages to each other, post notices on message groups, download files, play games, and chat with friends and neighbours. People were able to do all of this in a totally commercial-free environment and in a system that was rooted in the local community.

Often a forgotten victim of the Internet, the BBS (Bulletin Board System) culture was vibrant until the 1990s when the WWW exploded in popularity¹⁶. BBSes operate over telephone lines. Using a modem (Modulator/Demodulator), users call a BBS and connect. Information is then served directly from the host computer to the client (caller) computer. Long distance rates limit most users to local BBSes only, making the BBS a thoroughly local experience. News, content and discussion is geared towards a local audience and often sysops (System Operators) know their frequent callers on a personal level.

BBSes range from the single node (phone line) hobby 'board' run by casual operators, to mammoth subscription-based services with hundreds of lines and hundreds of megabytes of files¹⁷. However, even these large BBSes that require users to pay for access are run by local businesses, not multinational corporations¹⁸.

¹⁶ Since the popularization of the Web, the number of BBSes has reduced dramatically. Many places saw their BBS communities disappear completely.

¹⁷ I use megabytes because at the time BBSes were popular, gigabytes of disk space were a fantastical prospect.

¹⁸ Now defunct, Rose Media BBS in Toronto, ON was one of the largest BBSes in Canada.

There were a number of BBSes run by large corporations that differed from the local BBS in many ways. Services like CompuServe, Prodigy, and even America On-Line offered services beyond traditional downloading and message groups. They offered limited 'e-commerce' services, as well as gateways to the still infant Internet. Users could shop, browse news headlines, and send e-mail on the Internet. However, they operated as proprietary systems, unable to truly interact with the emerging Internet, and totally incompatible with each other. Not surprisingly, as the Internet exploded in the 90s, these online services quickly vanished or were transformed into the ISP mammoths we know today. America On-Line absorbed CompuServe and its nearly 3 million users in 1998 (AOL.com, 2001). Prodigy, which was formed in 1984 by IBM, Sears, and CBS under the original moniker "TRINTEX", continues to operate as an ISP and Internet portal today (Prodigy.com, 2001).

What these services represent is the centralized server model of network organization. Many clients call into a central server and are served information directly from the server. Control is located entirely on the server end and information flows mostly from server to client. This model is not entirely different from the new commercial model that these transformed online services are attempting to impose on the Internet.

The Local Experience

The experience of most users calling up their local BBS is quite different from the commercial environment. File libraries are not bottomless, busy signals are common, and often message boards are filled with casual banter rather than bursting from the barrage

of spam posts. However, what these 'boards' created was a sense of community that goes beyond the shared experience of users of a particular computer program or viewers of a television show.

A system called "echomail" links BBSes together to create a network of local communities that together constitute a truly global community. The largest echomail network, FidoNet, carries message groups that are available across the world. Smaller regional echomail systems allow specific local interest groups to flourish between small groups of local BBSes. Later, we will examine the global reach of BBS culture through an examination of the FidoNet echomail network and its relationship to pirate networks. This network allows users to send messages between BBSes. FidoNet uses a relay system to bounce messages from BBS to BBS until eventually messages propagated around the world.

Running a BBS is not unlike becoming a mini-ISP, and while access control still resides on the server side in BBSes, the flow of data between client and server is much more equal. Without much 'content' to supply, it falls to users to create the content and to make a BBS a vibrant online community. There are often upload quotas that force users to upload a certain number of files in order to be able to download programs¹⁹. Message boards carry news of local events and encourage get-togethers among users. Online games run more like a dart tournament at the local pub rather than the fast paced "death-matches" between complete strangers that take place on the Internet.

¹⁹ Because many of these uploads are marked with your name, users are discouraged from uploading junk files simply to gain download credit. Users learn to be productive members of the online community.

In structure, a BBS differs very little from a web page. A standard menu-based system guides users through various sections – hotkeys being replaced by hyperlinks in its Internet counterpart. However, in concept the BBS differs greatly from the WWW. Opening a virtual ‘storefront’ or ‘clubhouse’ on the Internet theoretically gives you a gateway to the world. You have access to a global audience pool but must compete with a global content pool as well. On a BBS, your audience pool is largely local and rather than being dwarfed by a global scale, a local focus becomes an asset that allows you to build a meaningful community.

The BBS model has many limitations that make it a less attractive option than the Internet. Bandwidth and storage space are both larger on a network the size of the Internet. Certainly, the usefulness of faster speeds, increased space, and multitude of users make the Internet a more useful tool than a BBS network. In the rush to globalize the audiences of web pages, the strength of the locally focused BBS was forgotten. A web page focused on a specific geographic location and its residents is marginalized and lost in a sea of billions of web pages. This local-focus is what gives it its relevance and strength – this is arguably what made the BBS successful. However, it provides an important perspective that we may wish to adopt when considering stances of resistance: by turning our eyes toward the local rather than the global, we also turn away from the multinational corporation back towards local business, and back to the community.

The BBS model holds many useful properties as a tool of resistance. It allows users to connect directly to each other without an intermediary²⁰. An unmediated interaction between users allows for an unrestricted exchange of information, which facilitates activities like file sharing. As we will see, disintermediation makes activities like piracy and file sharing networks possible. These activities are greatly simplified in an Internet environment where a direct connection between users is much easier to negotiate because of the increased pool of users that is online at any given moment. In a BBS environment, users must manually establish a direct connection between their computers before they can engage in digital transactions. Transactions are also limited to a one-to-one arrangement, so, in order to develop a 'network' in this environment, information must be relayed among many adjacent nodes in sequence rather than simultaneously. We will examine how these networks are formed in more detail in our discussion of pirate networks.

Disintermediation is one of the latest themes to emerge in the rhetoric of the Internet. The concept is quite simple: remove corporate intermediaries from the equation and put people in direct contact with each other (whether they are simply individual users or customers of an online business). The myth of disintermediation stems from a widely held view that the Internet is inherently democratic. Technology in itself cannot be inherently democratic or 'good'. As we will see, the course that technology follows is heavily influenced by social factors. As Daniel Bell states, "Technology does not determine social change: technology provides instrumentalities and potentialities" (Bell,

²⁰ Like an ISP, the phone company acts as an intermediary in this case. However, because the signal is analog, it is less susceptible to scrutiny by the authorities.

1989:167). The Internet has the potential for great democratic reform, but how we use it will determine whether or not these potentialities are realized. Theorist Geoff Mulgan describes the grand narrative of disintermediation, decentralization, and democratization in *Networks and Post-Industrial Societies*, where he explains:

Networks also become agents of decentralization, dissolving their pyramid structures of the traditional bureaucracy or corporation. [...] Nora and Minc [write of] telematics allowing 'decentralization or even autonomy of basic units' multiplying the areas in which the small organization would be superior to the large. 'The workshop will replace the factory, the branch office will replace the conglomerate.' [...] The era of the one-way television network, of the bureaucracy, the centralized state and the pyramidal corporation is seen to be evolving towards one based on reciprocal relationship and participation, in which knowledge and creativity are the key resources and the free flow of information erodes traditional authority and concentrations of power (Mulgan, 1991:22).

However, Mulgan warns that "just as the rifle could be used in the most tyrannical armies, so can liberating technologies and networks' organizational forms be used within structures that remain deeply authoritarian" (Mulgan, 1991:23). Those who would put all their faith into the essential democratic power of the Internet, would be wise not to let their eyes wander from the activities of those who would use the technologies for less-than-liberal means.

What we see emerging is a battle for control and a conflict between decentralization and centralization. As I mentioned earlier, centralization provides a more efficient model for building business in cyberspace. The anarchic nature of decentralized networks is not conducive to commerce on the Internet, and so it is not surprising that business interests

are moving to restructure the Internet into a form that is more favourable to conducting large-scale business.

A New Network For Business

In order for commerce to operate in cyberspace, it needs mechanisms of control and a certain level of security. The mechanisms of control are used to manage those who would deviate from the laws of cyberspace. Some of those who need to be 'controlled' would include hackers, pirates, copyright infringers, and fraud artists. The other principle that commerce operates upon is trust (Lessig, 1999). Trust is garnered by online commerce through assurances of security and confidentiality. The primary way in which this security is enacted is through the use of encryption methods that scramble data in a way so as to render it unusable to any potential criminal. As we saw earlier, technology is often a double-edged sword, and the power of encryption can also be harnessed by resistance movements in order to mask their activities from the authorities.

What commerce needs in order to conduct business under their current model is complete control over the stockpile and flow of information. What they are undertaking is a massive restructuring project to transform the Internet into their ideal business vehicle. In the process, they must also re-brand cyberspace as a place to do business, and change the anarchic 'wild west' image that it currently sports. In a way, they must tame cyberspace and sanitize it so that they can begin selling their products and services in safe, familiar ways. In terms of digital markets (software, web services, music, movies) one of the

largest problems is piracy. Capital combats piracy through the use of copy protection – a reaction that is arguably an immature reaction by an industry that does not understand the model of computers or the technology behind it. We will examine methods of copy protection and their circumvention in more detail in a later chapter on piracy.

Authorization and Authentication

In a network model, the concept of authorization underlies many technologies that power cyberspace. It is at the heart of all of capital's methods of controlling information and access – closing code, gatekeeping, even restructuring. What they build towards is a model with more gatekeepers, and increased authorization. In the real world, your authorization to conduct business is largely determined by the amount of money you have. You can buy a car if you have \$15 000, or you can buy a chocolate bar if you have \$1. On the Internet, the new forms of authorization don't have to take the shape of security checkpoints, but can mimic the money driven authorization of the real world. Authentication of your identity will be necessary, but can be transparent – as can the financial transaction. The implementation of this system may be close to wide scale implementation.

Case Study: Microsoft's .NET standard

Microsoft's emerging .NET standard provides us with an excellent opportunity to view the changing face of the Internet. What this standard attempts to do is re-envision Microsoft as a web services provider rather than simply a software development company. Microsoft bills the .NET standard as a decentralized, user-oriented system that

makes web services and e-commerce possible (Microsoft.com, 2001). However, as Clay Shirky notes in a pointed analysis, these claims are nothing but a smokescreen for what is a sly restructuring of activity on the Web.

The technology is based on standards like XML (eXtensible Markup Language) and SOAP (Simple Object Access Protocol) that allow clients to perform much of the computation, as well as seek out necessary services or applications from neighbouring computers instead of a central server. However, this seemingly decentralized system of web services in which users of the Internet share each others' computing resources to perform sophisticated economic tasks is tainted by the Orwellian authentication method that lies at the heart of the entire scheme.

Microsoft Passport is the new authentication standard that comes bundled into Windows XP and has been a part of their popular Hotmail service for years. A Passport account is just that, a digital "passport" that contains your personal details and is linked to an e-mail address²¹. A Passport account allows you to access Microsoft's online services like Hotmail and MSN (The Microsoft Network). Under the .NET standard, you require a Passport account to partake in any of the new web services. This means that despite the fact that when you access a new .NET powered web service from a website it may actually be powered by a computer down the street, before you can get the content you asked for, you must be authenticated by Microsoft by showing your Passport.

²¹ You can register for a Passport account using any valid e-mail address, it does not have to be a Hotmail e-mail account.

Even by itself, massive scale collection of user activity on the web is extremely valuable to generating new revenue for Microsoft. However, factor in that they intend to charge per use for both developers and hosts of content as well as users, and their transition from software developer to transaction mediator becomes apparent. Microsoft becomes the supreme gatekeeper of the Internet through which all traffic must pass in order to be authenticated (Shirky, 2001).

Motivations aside, this move by the world's largest software manufacturer clearly signals the direction in which capital is moving on the Internet. It is a move towards greater centralization, increased control, and decreased openness. However, just because technologies and standards like .NET exist doesn't mean they will be successful. As we will see in the examples that follow in this analysis, there is a rich and vibrant community of resistance that seeks to maintain the openness of the original network and promote freedom for all citizens of cyberspace.

Breeding and Branding

We should not underestimate the ability of capital to assimilate media and technologies for their own uses. The historical path of privatization on the Internet is not all that different from the paths of previous networks that began as publicly funded projects. The telegraph system that was rolled out nationwide (and eventually worldwide) in the mid 19th century eventually came under the control of the largest corporation in history. Western Union. What began as a publicly funded project that was to herald in an age of

prosperity, fell into the hands of private ownership and proved to be the archetype for the evolution of new network technologies. Similarly, the rail system began as a publicly funded project but after being taken over by private companies, it sprawled aimlessly across the continent and ended up in ruin because nobody was hopping on board to ride the rails (Romero, 2001).

What we discover upon examination of the situation is that making Internet commerce viable is not as simple as building a large-scale broadband network. Users must want to use it and know how to use it in order for it to work. We need to look no further than the current dire situations of companies like 360Networks (a company that owns fibre optic networks) or Nortel Networks (a company that develops technology for these networks). These companies are experiencing serious financial difficulties because people are not jumping on the broadband bandwagon as quickly as they had hoped. There is enough fibre-optic cable to reach from the earth to the sun, yet only a mere 5% of it is actually being used (Romero, 2001). Part of the problem is the “last-mile” dilemma, which means that many users do not have access to the broadband service that runs through their region because their local ISP does not have the infrastructure to connect them to it.

Capital’s next project in the drive towards commercialization is breeding a new generation of users who see the Internet as a shopping mall and an extension of their television. Capital must also undertake a branding campaign that casts the Internet as a safe, secure place where you can go to buy your granny a Christmas card and watch the latest episode of your favourite sitcom. This branding and breeding exercise is the focus

of the next chapter dealing with the contrast between digital citizens and cyber-consumers.

Chapter 4: Digital Citizens vs. Cyber Consumers

Introduction

The debate over whether or not we live in a consumer society seems to be all but over. There is little doubt that commerce has played an increasingly important role in our everyday lives. If the exodus from rural communities into urban centres to work in factories during the industrial revolution wasn't a strong enough signal that consumers were to become the new citizenry, then the recent trade evangelism of international leaders is the final nail in the coffin of the "citizen". The shift from rural to urban also creates dependence on business to provide the basic necessities of life. Suddenly, you need to work at a wage-paying job so that you can buy food and shelter. This lays the groundwork for a mindset that says "you *buy* what you need", and that may arguably translate into "you buy what you *are*" in today's consumer climate. This isn't to say that a rural existence in which you build your own house, hunt and grow your own food, and create your own entertainment is somehow an ideologically "superior" lifestyle to the capitalist consumer society, it is simply different. However, increasingly, the urban commercial culture is destroying the rural culture or forcing it to conform to its

parameters²². The shift from rural to urban parallels our examination of the extinction of the original cultures of the Internet by encroaching commerce. The pre-commercial Internet mirrors a rural lifestyle (community based, self-sustaining, non-profit), a lifestyle where community participation was vital to the success of the community. The rural Internet encourages activeness, as well as self-sustenance. The urbanization of the Internet brings consumerism along with it. Instead of creating communities for themselves, users are encouraged to look to commercial sites to provide them with their needs.

Breeding Citizens and Growing Potatos

Perhaps one of the most important reasons that early digital communities were self-sustaining is the fact that they had to be. On the frontier, there are no amenities to make life easy. You have to depend on yourself and the environment to provide you with your essential needs. In cyberspace, geography has to be created and defined by the users that inhabit it. Users are responsible for defining what their world will look like and how it will operate in addition to being responsible to making sure that it continues to operate effectively. A shared sense of responsibility and ownership can create community. Knowing that the community is only what you make of it is an incentive to participate in the community. In the case of BBSes, or websites, or MUDs (Multi-User Dungeons), it is the userbase that makes them what they are. Without users calling in and posting messages, a BBS is an empty hall (or even *worse*, an empty store). The same goes for

²² We need to look no further than the current farm crisis in Canada. Family farms are dwindling as they struggle to compete with "factory farms" run by large corporations. Encroaching suburbs, media exposure and the casting of farming as an outdated occupation all contribute to the difficulties faced by farmers, and threaten to destroy their culture altogether.

websites and other “locations” on the Internet. Users need to participate, whether by simply visiting or by becoming active members of the community. However, the definition of activity differs greatly between the open world and the commercial world. On the rural Internet, activity was broadly defined: post a message, write an application, upload a file, play a game, read a webpage. On the commercial Internet it is extremely narrow: buy. Arguably, “buying” is the definition of community activity in the real world too. Defining citizen duty as shopping (as George Bush did in the wake of the September 11th attacks) weakens democracy and contributes to a worldview that draws its borders at anything with a price tag. Vincent Mosco illustrates the shift from citizen to consumer that occurs not just in cyberspace, but as part of a larger shift in late-capitalist societies:

Into places and practices that once tended to be organized according to a different social logic, one based on universality, equality, social participation, and citizenship, which, for all of its well-chronicled shortcomings, broadened the grounds of social action now increasingly reduced to a market logic that equates rights with market power (Mosco, 1996:153-4).

Under this model of citizenship, your options as a “citizen” are extremely limited – to the size of your wallet. It becomes difficult to enact any kind of social change or build meaningful relationships when all interactions are based on financial transactions. As Stanley Fiske observes, “Shopping can never be a radical, subversive act; it can never change the system of a capitalist-consumerist economy” (Fiske 27). That is the reason that an engaged cyber-citizenry is critical to resisting the influx of capital on the Internet. The only way that consumers could wield shopping as a weapon was simply to stop doing it. By doing that, they would become active citizens rather than passive consumers.

What capital needs is a generation of computer users who are uninformed about the possibilities and the origins of the Internet. By rebranding cyberspace as a place to buy things, participation in the communities that built the Internet decreases as users stick to the well-fenced areas defined by commerce. Without participation these communities cannot survive, just as without patronage the consumer communities of capital will cease to exist.

What we will examine in this chapter is both how BBSes and the original cultures of the Internet breed citizens that are active members of a community, and how commercial cultures breed consumers that occupy a weak position in a power relation. Even if consumers are not simply passive members of society who simply ingest whatever is delivered to them, they have limited power to enact change in their community.

Freeing the oppressed

Gaining “freedom” through “consumer choice” is a myth. Besides the obvious limitations placed on consumers by the amount of wealth they possess, they find themselves in an impoverished position in relation to the producers of goods and services. The Internet seems to be headed towards a business model that is closely related to both broadcasting and publishing. Media mergers between content providers and network owners hint at the future of digital broadcasting. The proliferation of online advertising and the digital licensing models that are emerging for music and books all give hints to the model of organization that commerce has planned for cyberspace.

Commerce wants an audience on the Internet. Advertising and licensing models are far more lucrative than unit based business models for the simple reason that they must be constantly renewed – new advertisers must constantly buy space, and licenses expire and must be renewed. In contrast, it is possible to saturate the market for a particular product.

Adopting a broadcast model in which advertising pays for programming rather than relying on user subscriptions casts consumers into the role of audience members, where their attention is vied for by the producers of content. When studying the relationship between audiences, advertisers, and content producers, it is important to remember the impoverished position audiences occupy:

...it is useful to think about analogies between audience activity and the labor process because the latter is a dynamic activity involving complicity and contestation between capital and labor over control of the process and the product. This is considerably more valuable than addressing the audience as the inert mass that so-called mass society theorists, dating from Ortega y Gasset (1957), have conjured, or, alternately, as the co-producers of media products, the view on offer from pluralists like Fiske (1989) and Ang (1991), who respond to traditional criticism of the mass society by going to the other extreme. The latter are correct in pointing to the co- or mutual constitution of media products, *but* they neglect to situate this within a structure of decision-making that places in the hands of capital most, though not all, of the levers on control over decision-making processes regarding production, distribution, and exchange (Mosco, 1996:149).

If consumers are to wield their power solely based on market devices, they seem crippled when placed in this context. They do have little or no control on what is produced, and their only choice is to either accept what is given to them or to reject it and hope that

something desirable appears in the future. Because they do not own the means of production, they are unable to produce what they need or want.

In contrast to total consumer paralysis that is proposed by the Frankfurt school, Michel de Certeau suggests that unlike the easily influenced 'mass', individual consumers exercise a great deal of power over their consumption. He says that the assumption of passive consumption, and malleable audiences is in fact a technocratic conclusion resulting from the industrial structures in place. A quote from *The Practice of Everyday Life* illustrates his thesis:

The efficiency of production implies the inertia of consumption. It produces the ideology of consumption-as-a-receptacle. The result of class ideology and technical blindness, this legend is necessary for the system that distinguishes and privileges authors, educators, revolutionaries, in a word, "producers," in contrast with those who do not produce. By challenging "consumption" as it is conceived and (of course) confirmed by these "authorial" enterprises, we may be able to discover creative activity where it has been denied that any exists, and to relativize the exorbitant claim that *a certain kind* of production (real enough, but not the only kind) can set out to produce history by "informing" the whole of a country (de Certeau, 1984:167).

What de Certeau proposes is that audiences take elements of the culture they are fed by those in control and bend it to suit their needs. However, this kind of scavenging seems very weak to form a basis of resistance. Consumers still require the original item that they must purchase in order to then adapt it to their needs. They may create a unique derivative culture from the mainstream commercial culture presented to them, but because they require the existence of the commercial culture to facilitate the existence of their derived culture, engaging in successful resistance would result in the extinction of

their derivative culture. What is important here is the element of activity among the consumers who deviate from the passive stereotype. Being active is the precondition to citizenship, and those that are engaged in these activities are better prepared to make the transition from consumer to citizen.

The working audience

Many consumers may not feel any need to resist the commodification of their spaces and cultures. For many people, the broadcast model represents a kind of “free lunch” since content is apparently free. Viewers are free to ignore advertisements and focus their attention only on the content²³. However, advertisers bet on a portion of the viewing population to focus their attention on the advertisements being broadcast along with the content.

The advertising model operates on the premise that content providers deliver specific audiences to advertisers. In *Dialectic of Enlightenment*, Adorno and Horkheimer classify audiences as mere statistics, and actually differentiate cultural forms based on the classification of audiences or to use a modern term, ‘demographics’ (Adorno, 1944:123).

Under a commercial system, citizens are nothing more than consumers, and a consumer is nothing more than a member of a particular demographic. The entire system operates

²³ Perhaps the failure of online advertising is related to the fact that rather than selling audiences, banner ads sell referrals. Content providers are only paid if people “pay attention” to the ad (by clicking on it). This stands in stark opposition to the model employed by traditional broadcast media. The necessity of needing referrals has led to increasingly intrusive banner advertisements, some of which require users to manually close them before they can view content. This dispels the illusion of the “free lunch” since users can no longer simply tune out advertisements. The effectiveness of these “in-your-face” ads is questionable, as they certainly annoy users who are interested in accessing content, and may even deter users from visiting a particular site that employs these sorts of ads altogether.

on an economic basis and fails to take into account only concerns that affect the profitability of the system. Functional concerns are only addressed insofar as they relate to the ability of the system to generate profit – regardless of how many users demand a certain feature, it will not be implemented if it is not profitable.

Besides being reduced to numbers on a balance sheet, audiences by no means get a “free lunch” by tolerating advertising in cultural content. Dallas Smythe proposes that audiences work by providing their attention to advertisers and are rewarded with content (television programs, magazines, newspapers) (Smythe, 1981). In a commercial system where audiences are reduced to statistics, they become a commodity to be bought and sold. The transformation of cyberspace into a commercial space extends commodification beyond the infrastructure and the content and to the users themselves.

When advertisers buy advertising space, they are not simply renting time or space, they are purchasing audiences:

As hardnosed businessmen they are not paying for advertising for nothing, nor from altruism. What they buy are the services of audiences with predictable specifications which will pay attention in predictable numbers at particular times to particular means of communication (television, radio, newspapers, magazines, billboards, and third-class mail) in particular market areas. As collectivities these audiences are commodities. As commodities they are dealt with in markets by producers and buyers (the latter being advertisers) (Smythe, 1981:27).

While demographics research used for the construction of the audience commodity was previously performed by organizations such as A.C. Neilson, the machinery of the Internet allows for automated construction and administration of these audience

commodities. User information is a valuable commodity on the Internet. Consider MP3.com, which requires users to submit an e-mail address before they can download music. CEO of MP3.com, Michael Robertson is quoted in a recent New York Times article as saying “Who has ever had the e-mail addresses of a million Madonna fans? Nobody.”²⁴ Individual user information has been compiled to form an audience commodity to be sold to advertisers. The fact that you listen to Madonna has turned you into a product sold to advertisers, and your leisure activity of listening to Madonna turned into work by forcing you to view advertising on the web page, likely tailored to suit your particular tastes.

The creation of audiences in this manner is part of an intensified commodification process, and what Mosco calls the creation of the ‘cybernetic commodity’. In a discussion of television ratings, he provides a salient explanation of the cybernetic commodity:

Commodification demands the use of measurement procedures to produce commodities and monitoring techniques to keep track of production, distribution, exchange, and consumption. [...] These practices are part of the commodification process because the information they produce is used in the production of commodities [...], and are cybernetic because the outcome of the information production process is the production of a new commodity. [...] They are part of a family of such commodities that grow out of the development of generalized monitoring and surveillance procedures that make use of advanced communication and information technology (Mosco, 1996:151).

Clearly, the monitoring and data collection techniques used by My.MP3.com (and many other services, including Napster, The New York Times, Yahoo! etc.) and the data they yield are extremely similar to the system of television ratings and market surveys used in

²⁴ New York Times. “MP3.com to Resurrect Service.” Technology. December 5, 2000.

traditional media. Their use in the creation of the previously absent audience commodity to be sold to third parties, and targeting of audience specific advertising also identifies them as a 'cybernetic' commodity. Keeping MP3.com CEO Michael Robertson's comment about Madonna fans in mind, we return to Mosco, where he quotes DeSimone:

[They shift the commodification process] from the value that is *intrinsic* in the product to values associated with the knowledge of who needs it, who supplies it and what it does. You buy a magazine and pay for it with a credit card. A simple transaction? Hardly. The *information* about who you are and what magazines you prefer – recorded by a computer – is worth as much as the return on the sale of the magazine. The information can be variously packaged. It can be marketed to others (Mosco, 1996:151-2).

The parallels between the two statements are obvious. The shift towards cybernetic commodities represents a definite intensification in the commodification process that has obvious implications in the areas of personal rights, privacy, and exploitation of labour. The very creation of cybernetic commodities and the use of user-surveillance are antithetical to the origins of the Internet. They do not require consumers to exist (even unsuspecting cyber-citizens can be tracked), but they can be disrupted through the actions of determined members of the online community.

Users who wish to combat their commodification as audience members might decide to disable cookies in their browser, thereby preventing websites from tracking their movement. Users may also decide to falsify registration information at services like Napster or MP3.com in order to combat audience commodification. Surveys report that users are taking advantage of these resistance techniques. Almost 40% of users report falsifying data at one point or another, with almost 15% claiming to have falsified

registration information at least 25% of the time.²⁵ And while relatively few users are disabling cookies, 23% of users report that they receive warnings about cookies so that they can decide on a case-to-case basis.²⁶

When users begin actively resisting their commodification as audience members, they take their first step away from being consumers under a commercial regime and move towards a life as an engaged cyber-citizen.

Netizens

In order to effectively resist commerce, users need to become active citizens in cyberspace. They need to go beyond simply being active resisters and become active community builders as well. Users need to build alternatives to the commercial network of capital in order for their digital cultures to survive. As I mentioned in the opening of this chapter, the “rural” Internet forced users to engage in their communities. Without their participation, there would be no community as they were forced not only to participate and maintain these communities, but to actually build them in the first place.

Systems like BBSes demand participation from their users. On a BBS, the sysop is not the sole provider of new content. Sysops are simply other members of the community, who act more like editors or administrators than authors. Before the popularization of the Internet in the 1990s, a BBS would have been many users’ first interaction with online communities. The nature of BBSes breeds users that see cyberspace as a place to interact

²⁵ GVU 7th Survey. “Falsification of Information.” 1997.

²⁶ GVU 8th Survey. “Cookie Policy.” 1997.

and participate rather than simply an information source. So, what about BBSes makes them participatory?

- **Discussion Groups.** BBS stands for Bulletin Board System. The nature of these systems was originally digital “corkboards” where users could post messages intended for other members of the community. The focus on exchanging messages created a vibrant online dialogue in BBS communities. Message boards are mostly public and so all discussions were available to all members of the community. The system of “echomail” message boards allows members from different BBSes to interact with each other²⁷. The Internet equivalent to the message boards would be USENET newsgroups.
- **File Sharing.** BBSes allow users to download files from what was more of a community collection than a file database provided by the sysop. Users contributed to the vibrancy of the repository just as much as the sysop. Users had upload quotas that forced them to balance their uploads with their downloads²⁸. Users provided descriptions of the files they uploaded that often took the character of a mini-review of the program, image, or document that they were uploading. This model of file sharing is quite different than the “leech” friendly Internet, where it is possible to contribute nothing but take as much as you want. Of course, leech-like behaviour is ultimately self-defeating when the community resources depend on the participation of individuals.

²⁷ I will discuss the echomail system in detail in Chapter 6.

²⁸ Large commercial BBSes have bottomless file repositories and no upload quotas, but consequently lack the intimate community feel of local BBSes.

- **Online Gaming.** Online games are very popular on BBSes. Called “doors”, these games allow users to play games online against other members of the BBS, and in some cases against users from other BBSes. However, this kind of online gaming differs greatly from the large web-based gaming that takes place on sites like Microsoft’s Gaming Zone (www.thezone.com). On the Internet, popular gaming between users utilizes commercial websites (run either by an intermediary like Microsoft, or by the game publishers themselves), whereas BBS gaming rarely involves the interaction of a commercial entity.

We can see that the Internet possesses all of the same facilities as the BBS in terms of functional interaction between users. However, there are two important differences that present themselves:

1. **Scale.** The Internet has innumerable more users and nodes than a single BBS or even a BBS network. Consequently, the scale of all activities on the Internet is increased – more files, more messages, more games, more users. The difference in size is an important distinction between the two systems.
2. **Commerce.** For the most part, BBSes are non-commercial. Some larger BBSes require a subscription fee, and some programs (games, BBS software) require small registration fees for their use. However, on the Internet, commerce is a dominant presence and services are increasingly moving towards an advertising or subscription model.

What we might take note of is that scale and commerce appear to be linked. Just as large BBSes charge for their services, a large scale Internet also attracts the interest of commerce. What we need to keep in mind here is that the key elements that breed citizenship, or create "netizens" are participation and community. These two concepts are directly linked, there can be no community without participation, and it is the sense of community that encourages participation. In BBS systems, this sense of community is fostered by the local focus of the BBS, and participation is not simply regulated by the technology, but by the nature of the community.

In a paper entitled *Reconstructing Citizens as Consumers*, Neal Ryan suggests that "a central problem associated with the language of citizen as consumer is that it implies a passive role for citizens rather than a participatory engagement" (Ryan, 2000:7).

Passivity is the enemy of citizenship, but it is exactly what commerce seeks to breed on the Internet by adopting a broadcast model. Further into his analysis, Ryan quotes the following passage:

Consumer sovereignty does not express the fullness of citizenship... If the ultimate criteria against which the private sector is measured are efficiency and profitability, the dominating ideas in the public service are justice and democratic control (Walsh, 1994: 67).

However, under a regime of capital, the notions of justice and democratic control are not even on the agenda. If we are to regard cyberspace as an actual space that is inhabited by virtual citizens, imposing a system of commercial control is tantamount to declaring a totalitarian state. If we are to consider the Internet as an extension of public space, and a

communicative link between peoples and cultures then it is our duty as cyber-citizens to oppose the imposition of a market-based, commercially controlled system of cyber-governance. However, casting users into the role of consumers (and in fact casting all citizens into that role) has powerful effects on the nature of the society that users inhabit. Ryan quotes Patterson, saying that “customer language urges citizens and bureaucrats alike not to notice, or to ignore, the relation of individual citizens to government structures, and not to conceive of voice and resistance as possibilities” (Patterson 1998: 228). This quote illustrates the very nature of the argument put forth in this chapter: that capital seeks to breed a new kind of user, one that does not see the possibilities of the medium and accepts the commercial nature of the Internet at face value. In order to combat commodification and commercialization, users need to step up and declare themselves as citizens of cyberspace rather than simply another audience demographic or potential customer.

The rollout of large scale consumer services on the Internet, combined with advertising campaigns to promote them to the wider population continues to marginalize the communities that built the network in the first place. To return to our example of BBSes, they have been marginalized from a once vibrant culture into a tiny subculture, buried under the weight of the popularized Internet. Despite their marginalized state, they continue to stand as an alternative culture of resistance to the commercial Internet. BBSes propose a distinctly different model from the global Internet – a local focus with community participation. They also provide a gateway from which we can jump off into the featured resistance communities that we will examine in this analysis. From here, we

proceed under the pretext that there is indeed a threat to the non-commercial cultures on the Internet, and that a decreasing citizenship threatens to undermine the future of the open Internet.

We now shift our focus to the communities that are forging alternatives to the commercial Internet and those that oppose it. I will provide an overview of how these communities work, what they do, and how they do it. By the end of these profiles, we might be able to better see how they provide valuable alternatives to the single-vision of a giant cyber-mall for all.

Chapter 5: Virtual Communities – Forging an Alternative to Commerce Through Open Source Software

Introduction

Cyberspace is often described as a virtual space in which virtual citizens inhabit virtual communities. There are a number of very large non-commercial communities that exist on the Internet, large enough to provide a meaningful opposition to the artificially created communities of America On-Line or The Microsoft Network. MSN and AOL are artificial communities because they are manufactured as a service. These communities did not grow out of a shared interest among users; they were engineered by corporations in order to generate profits. Their primary concern is profit and scale, rather than serving the actual interests of users or fostering a community spirit. In contrast, user based communities have grown organically out of shared interests, or out of technological necessity. Many of these communities are based around Internet applications, some of which have been recently introduced, and others have formed the core of the network for decades.

Communities based around applications generally do not represent a set of new relationships that have emerged due to common interests or goals. Instant messaging

communities usually just extend communication to those you already know, much like e-mail. File sharing applications create relationships of utility and exchange rather than any kind of real connection. People simply draw off the pool of resources that results from the combination of many users contributing to the digital commons.

In the coming chapters, we will see case studies of a number of communities including the Open Source community, the pirating community, the cracking community and the file sharing community. While they certainly all have links to each other, they all have distinct features that characterize their own brand of resistance to commercialization.

Communities like file sharing and pirating center around the exchange of data, although the latter possesses a stronger sense of community than file sharing. Crackers and hackers are the subjects of the other two communities – hackers slaving away at open source programs, trying to build their own digital space, and crackers launching digital salvos at the gatekeepers of the Internet. All of these communities represent an important wave of resistance to the encroaching reach of commercial interests into cyberspace.

The act of resistance itself is not enough to pose a significant challenge to the existing system of dominance by commercial interests. Users need to go beyond campaigns of resistance aimed at attacking, vandalizing, or “stealing” (in the case of file sharing) and embrace a culture of resistance that creates an alternative to the pay-per model proposed by corporations. The Open Source or Free Software movement that has emerged on the Internet has proven to be a true challenger in the fight for control in cyberspace. It not only provides a viable alternative to the commercial model, but also undermines the

viability of a commercial Internet. By providing quality software at an extremely low (or non-existent) cost, it becomes extremely difficult for commercial software vendors and pay-per web service providers to compete with open source products. However, free (as in no-cost) software is not what the open source movement is about. Open source, or free software is about freedom for software rather than freedom from cost. Open source seeks openness in code, freedom from cost is merely a side benefit.

What is open source?

Open source is a concept that has existed since the birth of the Internet – stretching back into its previous incarnation of the ARPANET. University researchers and government employees shared source and resources in order to develop the basic frameworks upon which the Internet would be built. Without open source code, the Internet may not exist today. The free software movement is based on the notion of open source, meaning open source code. Source code is the set of human readable instructions written in a computer language that underlies applications²⁹. In order to run, source code must be compiled³⁰ into code understandable by a machine. Generally, applications are distributed in binary (compiled) form, which prohibits access to source code. However, open source programs are often distributed in source code form and so require a compiler³¹ before they can be used. Many popular open source programs, like Linux are also available in binary

²⁹ Appendix A provides a sample of source code.

³⁰ Compiling is the process of turning human readable source code written in a computer language into the object code that is readable by the machine. The instructions written in the computer language are essentially translated into the set of instructions present in the computer's hardware.

³¹ GNU/Linux distributions come packaged with the open-source GCC compiler necessary to compile most open source programs. In addition, they also come with packaged with the open-source programming language Perl, created by Larry Wall and used extensively in web applications.

distribution form. Distribution in binary form does not make them closed source programs, since access to source code is always available via the website, or in the case of CD-ROM distributions, it is often included in the binary distribution. Many users do not have access to a compiler, or do not have the expertise to operate it effectively and so the availability of binary distributions of open source programs is vital to their success.

If so many users cannot even operate a compiler with pre-written source code, what are the chances that many of them have the necessary expertise to understand source code? And if none of them can understand the source code, what is the use of granting them access to it in the first place? Open source guarantees openness in code. It also ensures the freedom of software. A deceptively simple tactic, access to source code undermines the very premise on which the software industry operates. By controlling access to the resource (in this case, code) software companies can charge for access to their product. Because the code is closed, they also maintain monopoly over all upgrades and service to the particular application. However, once the code to these programs is widely and freely available, it becomes difficult to maintain a monopoly over access to the code. Open source eliminates the economies of scale in the software industry by eliminating any advantage gained by the low cost of duplication of software.

Economics of Information

Let's take a moment to examine the economics of software and information more closely. An economy of scale operates on the premise that while it may take a large investment up front to produce one item, mass production of that item can yield great profits because of lower duplication costs and sales of many units that offset the initial investment cost. In

an information economy this effect is exaggerated. The cost of duplication for software is effectively zero³². So, once a piece of software is developed it can be duplicated an infinite number of times at almost no cost. In a closed code system, this allows for a theoretically bottomless well of profit as long as demand for the piece of software continues.

In addition to the low cost of duplication, the software industry differs from traditional industries in a few other key ways. Firstly, the cheapness and ease with which software publishers can duplicate their work is extended to users. Computers make it extremely easy for users to copy software, and the Internet makes distribution of copied software extremely easy³³. Secondly, not only do computers make it easy to copy software, but as opposed to car manufacturing which is far beyond the reach of any ordinary citizen, software manufacturing (ie. development) is within the grasp of ordinary citizens. Having access to and ownership of a means of production in the software industry creates an incredible opportunity and differentiates the digital economy from more traditional industries. It allows for citizens of a digital community to take it upon themselves to build their own spaces and tools rather than purchasing them in pre-packaged form. Access to a digital means of distribution like the Internet only enhances this ability to build space and identity rather than buy it. Users can spread their tools to others, and in turn gain access to the tools that other cyber-citizens have built. Citizens of the net who engage in open

³² There is a small cost to duplicate software that is stored on physical media (CDs, diskette, etc.).

³³ Many software publishers have attempted to introduce various forms of copy protection to make copying software more difficult. However, the very active cracking community has remained a step ahead of these developments. Software based methods of copy protection have been universally cracked. Some games experienced a period of success by using elaborate manual checks, decoding wheels, and other non-software based methods of copy protection. However, the availability of scanners has rendered these methods obsolete. Currently, some publishers are experimenting with CD-based copy protection but with little success as new patches for CD-burning programs appear on the net almost daily.

source development activities use the medium of the Internet for what it was intended; as a communication tool which allows for wide scale democratic software development and the growth of alternative communities³⁴.

So, what does access to a means of production and a distribution network have to do with open source software? Well, while it's impossible for a single developer to create a piece of software that might rival something as complex as Windows or a professional office suite, it is possible for a community of developers working together to produce products that are competitive. However, a community of developers working together on a project doesn't constitute open source, and it doesn't eliminate the economy of scale that I was talking about earlier.

Openness undercuts the economies of scale in the software industry. If it's possible for you to see how a program works, and to modify it, improve it, and then release a competing program, it becomes difficult for the originating company to make a great deal of money from their program through mass production. Even if the open code was protected by a license that prohibited redistribution, it would not be difficult for a determined individual to re-write the code and give it away, thereby canceling the effort of the original developers. Open code revolutionizes the industry for both open source programmers and those who continue to release closed code products. Open source software's ability to undermine the commercial viability of closed code software makes it an ideal tool of resistance for citizens of cyberspace.

³⁴ As we saw in a previous chapter, this decentralized, open and democratic method of development and organization is quite different than the centralized model that is being pursued by corporations. In essence, corporations are looking to transform the Internet into a broadcast medium in order to maintain monopoly over content and communication in cyberspace.

Licensing Freedom

Just as open source allows someone to take a program and improve upon it and re-release it into circulation, open source can also allow someone to steal a good idea and profit on it by turning it into a closed source program³⁵. To protect the rights of open source developers, free software licenses exist that ensure openness in code.

Contrary to opinions expressed by the world's largest software developer³⁶, maintaining openness in code encourages innovation, quality and usability. What open source does stifle is the process of commodification and consequently profits for software developers. The clauses contained within free software licenses protect developers of open source programs from exploitation and guarantee that programs that begin open remain open.

There are numerous public licenses that protect open source programs. They have varying restrictions on duplication, modification, and closing code. The most widely used are certainly the GNU (GNU's Not Unix) General Public License (GPL) and Berkeley Software Distribution's FreeBSD license. Both of these licenses are designed for open source software, with the GPL having slightly more restrictive clauses that expressly forbid the use of GPL code in closed code commercial applications. We're entering into a tangled world of extremely similar definitions, acronyms, and technical jargon, and so first I'll lay some groundwork.

³⁵ It is important to remember that just because open source software presents a threat to closed code development, it does not wholly invalidate the closed code model. As is the case with many technologies, the 'better' technology does not always prevail (see: Betamax videocassettes). Open source software suffers from a public image problem that hampers its mainstream acceptance.

³⁶ In a recent story reported by CNET.com, Microsoft called open source software "a threat to innovation". See <http://news.cnet.com/news/0-1003-200-4833927.html>. Last accessed 12/08/2001.

Organizing Open Source

It's not difficult to imagine open source development as a wholly chaotic process where hundreds or thousands of individual developers haphazardly hack away at a piece of software yet somehow manage to distill a usable application from the mess of code. The reality of the situation is that the open source community is in fact a highly organized place with a number of pseudo-governing bodies that keep things from flying apart at the seams.

The Free Software Foundation (FSF) which is run by the widely popular GNU (GNU's Not Unix) movement are the keepers of the GPL. In 1984, in an open call for programmers to contribute to a free Unix alternative, Richard Stallman³⁷ started the GNU project³⁸. In 1985, the GNU project members started the Free Software Foundation to promote and protect free software. The FSF makes it clear that free software does not mean *no* cost, but rather it is a form of liberation for code. They describe it like this: "'Free software' is a matter of liberty, not price. To understand the concept, you should think of 'free' as in 'free speech,' not as in 'free beer.'" (GNU.org, 2001) They maintain that programs are freely available for commercial use, but that they must remain open. According to the FSF, free software complies with the following four conditions:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this.

³⁷ Richard Stallman is the author of the popular Unix text editor "emacs".

³⁸ Unix is an operating system used mostly in server applications. It was developed by Xerox Parc in the early 1970s.

- The freedom to redistribute copies so you can help your neighbour (freedom 2).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits. (freedom 3). Access to the source code is a precondition for this.

As you can see, freedom from price is not included in any of these conditions for freeness. This is an important characteristic that is required to present open source development as an alternative to a closed code software economy. The FSF is mainly an advocacy group for free software; raising money for free software projects through sales of shirts, software distributions and software manuals. A number of very important legal frameworks have come out of the FSF and the GNU project. The GNU General Public License protects code by ensuring it remains permanently open source³⁹. Under a scheme called “copyleft”, author’s rights are protected from theft by maintaining openness and freedom rather than restricting the ability to copy (as is the case with copyright).

Protecting software under a license like the GPL is quite different than simply releasing software into the public domain. Free software is often thought of in terms of “shareware” or “freeware” or “public domain”, however none of these types of software by their nature protects the rights of the author. Giving your software away for free does not prevent someone from taking it and using it in a proprietary application for money. Not surprisingly, most applications that fall into the previous categories are released in binary form so that they are more difficult to steal.

³⁹ There is also a Lesser General Public License (LGPL) that allows some proprietary use of GPL code in closed code applications.

In order to protect their property rights, most authors choose one of the many open source licenses available. In addition to the FSF and the GNU project, one of the major players in the free software game is the Open Source Initiative (OSI). It acts as a pseudo-regulatory body that attempts to regulate licenses that comply with their Open Source Definition (OSD). The OSD is based on the Debian Free Software Guidelines, which were originally conceived in 1997 (Opensource.org, 2001b). What is particularly significant about the OSI in relation to the question of commercialization is that the OSI exists solely to make the case for open source software to the commercial world (Opensource.org, 2001a). The OSI maintains that the 'evolutionary' model of software development is superior to the closed model, which results in better software for business use.

The acceptance of open source by the business community for what are termed 'enterprise' systems and customized software development might help solidify an industry in open source development. To find an example of a successful and widely accepted open source program you need to look no further than the nearest web server. Over 50% of web servers run the open source Apache web server, beating out Netscape and Microsoft for the title of most popular server software. And the flagship open source program Linux is gaining popularity even with such industry giants as IBM.

David vs. Goliath

Linux is without a doubt the most popular, and most successful open source program ever written. Written by Linus Torvalds, Linux was an extension of the GNU project's free

Unix-like operating system. There are an ever-increasing number of Linux distributions and with each iteration, it becomes increasingly more refined – as digital evolution evolves the next generation operating system. Linux itself presents a fascinating case study in user-resistance on the Internet. Linux is a totally free, fully functional, highly customizable, extremely powerful operating system that provides a viable alternative to Microsoft's Windows monopoly.

Linux comes packaged with thousands of open source programs that attempt to emulate the functionality provided by many popular software packages available for Windows. Even the window management software is beginning to emulate the look and feel of Windows. Currently, Linux is experiencing immense success as a server platform. It powers over 50% of web servers on the Internet, but to date it has yet to crack into the desktop user base.

I would argue that breaking into this user base is a crucial step towards stopping the influx of commercial services onto the Internet. Bringing users into the Linux community removes them from the convergence loop that is approaching near ubiquity in the mainstream commercial Internet. Removed from the mainstream, users can rediscover a community that is built around sharing and openness. There is no loss of functionality, everything that is available in Windows exists in Linux, but the total integration that Windows subjects its users to is not present – the ability to purchase the CD version of a time-limited MP3 you are currently listening to is not a feature of the Linux operating system.

Choosing to install Linux is choosing to become a member of a specific community more than simply just installing an operating system on your computer. When installing a piece of commercial software your relationship to the developers and publishers is purely economic. They have a vested interest in keeping you happy so that you continue to buy their products. Because open source software like Linux has no cost, there are also no guaranteed support channels or bound manuals. Users are making a conscious choice to leave the “security” of commercial operating systems behind in order to embrace a culture that is in many ways antithetical to mainstream commerce. That isn’t to say that commercial applications for open source software aren’t feasible or desirable, but merely to indicate that they represent an alternative model of organizing economic activity on the Internet.

Open source presents itself as a strong challenger to the dominance of commercial interests on the Internet not simply because it undermines the viability of commercial software, but because it also poses an alternative method of organization. Staying true to the open origins of the Internet, it manages to organize a democratic space in which technological solutions can evolve. Community becomes an important element in the development, maintenance, and ultimate success of software and services.

Technical support comes from users and developers of the software at hand instead of from a toll-free hotline. Users who have had the same experiences as you, and developers who know the programs inside-out provide solutions to problems happily. In contrast to the plastic interaction between a technical support representative reading from a script,

the exchanges that occur on open source message boards and chat rooms are cordial and genuine.

Communication between users and developers occurs constantly in the open source community, something that is rare in the commercial software community. Users can express their feelings about features, request new ones, report bugs, even contribute to the code base if they so desire. The result is a highly democratic process that encourages attention and activity in a community. It demystifies the process of software development by exposing the process to the world and encouraging participation rather than attempting to keep the 'trade secrets' under wraps. In short, open source breeds digital citizens rather than passive consumers. At a time when the duty of citizens is often reduced to shopping, any attempt to exercise democracy and become an involved citizen in any community should not be dismissed as trivial. Participation in a digital community may have limited repercussions outside of cyberspace, but it forms new attitudes that translate beyond the computer screen. A campaign against the commodification of cyberspace becomes a lobby against another Wal-Mart store; installing an open source operating system becomes a boycott of sweatshop clothing; participation in open source development becomes support of local independent business. Being a citizen is not so much an activity you partake in like shopping, but rather a lifestyle that you engage in on a daily basis and an attitude that you carry with you in everything you do. The consequences of the colonization of cyberspace by capital may not seem grave compared to the problems that lurk in the real world. However, the success of commerce means the end of openness. A victory for open source means a viable alternative to the commercial

monopoly that is spreading throughout cyberspace.

“Not the only game in town”

If open source has dreams of mainstream acceptance, either by overthrowing the empire of commerce, or by making inroads into the existing hierarchy, they are represented in the OSI. The dominance of GNU/Linux often overshadows many of the less-radical elements of open source culture that are less interested in active resistance to commerce, and more interested in forging inroads for open source development. Eric Raymond, founder of the OSI writes about the nature of the ‘pragmatists’ in the open source movement:

But the FSF [Free Software Foundation] was never the only game in town. There was always a quieter, less confrontational and more market-friendly strain in the hacker culture. The pragmatists were loyal not so much to an ideology as to a group of engineering traditions founded on early open-source efforts which predated the FSF. These traditions included, most importantly, the intertwined technical cultures of Unix and the pre-commercial Internet (Raymond, 2000b).

Raymond describes how pragmatists see things like the GPL as a tool to further open source rather than an end unto itself. He describes anti-commercial zealots as purists who would oppose any form of profit-taking from software development. The pragmatists are not pro-commercial, but are moderate in their practice of anti-commercialism:

The typical pragmatist attitude is only moderately anticommercial, and its major grievance against the corporate world is not ‘hoarding’ per se. Rather it is that world’s perverse refusal to adopt superior approaches incorporating Unix and open standards and open-source software. If the pragmatist hates anything, it is less likely to be ‘hoarders’ in general than the current King Log of the software establishment; formerly IBM, now Microsoft (Raymond, 2000b).

What Raymond suggests is that ‘hacker culture’ operates by a fundamentally different set

of principles from the mainstream commercial culture⁴⁰. He describes the open source culture as a “gift culture” – one in which social status is not determined by how much you possess, but how much you give away. There are many cultures that exist outside cyberspace that are gift cultures. As Raymond points out, they exist generally in situations of abundance, where scarcity of resources are not a problem (Raymond, 2000b). Abundance is a critical element in the existence of open source culture. Without abundance of talent, disk space, bandwidth, and computing power there would be no wide scale open source development. Open source projects existed before the explosion of the Internet, but they were not nearly as successful as those that had the benefit of Internet development (most notably Linux). The irony of the situation is that open source development on this scale would not be possible without the massive explosion of Internet access and computing power that was brought about by the boom in the computer industry. When the GNU project started, bandwidth was scarce, and computing resources were limited. Coordinating a large project among enough people who had hardware that could develop software would have been extremely difficult. The connectivity that accompanied the rise of the Internet allowed thousands of previously isolated developers to come into contact with one another and to pool their resources to create sophisticated software.

The involvement of thousands of programmers and totally open source code might suggest a state of near chaos at any given moment. However, a strict adherence to a ‘hacker code of conduct’ seems to maintain order (in combination with sophisticated source tracking tools). In a culture where credit for a project elevates your social status,

⁴⁰ This set of principles is the “hacker ethic” that we discussed in Chapter 2.

you might wonder if there isn't constant bickering over the ownership of a particular project. However, as Eric Raymond points out, the rules that govern hacker culture have evolved over time to encompass respect and responsibility. What we see is another excellent instance of democratic communities evolving on the Internet, and another reason why defending them from capital is so important. What we see in digital communities may not have far reaching effects outside of cyberspace, but may provide a valuable model that we might draw upon in our external lives. Raymond explains that the open source community has followed a steady trajectory towards even greater openness, and that the "direction has been to encourage more public accountability, more public notice, and more care about preserving the credits and change histories of projects in ways which (among other things) establish the legitimacy of the present owners" (Raymond, 2000b). We might seek to draw upon this model of community development in our dealings away from our computers.

Setting the stage for change

The conflict between commercial software and open source software on the Internet is profoundly ideological in nature. Eric Raymond describes these two opposing models of development as the Cathedral and the Bazaar (Raymond, 2000a). He likens the commercial model of software development to the erection of cathedrals in the middle ages; mammoth projects built by many workers under the guidance of a single master architect. In contrast, open source development is compared to the bazaar, where the interactions and exchanges of many individuals combine to create a piece of work that reflects the interests and needs of the community as a whole rather than the individual

vision of a single person.

As we have seen, the success of open source software in the server market is well established, with former industry giants such as IBM adopting open source models for their own server software. However, if open source is going to play a role in the battle against corporate conversion of the Internet, it will have to take its case to the users of the Internet. Open source will have to reach beyond the borders of the hacker culture, beyond the technologically literate and reach into the consumer market that capital is taking great care to create.

In order to access the desktop consumer user base, what open source software needs to do is overcome the preconceptions that it is difficult to configure and use, and that it lacks the support network of commercial software. Arguably, open source software addresses the needs and wants of users more directly since the programs are built by members of the same user community. Profiteering and market dominance is not a problem since the specifications are open, allowing anyone to gain entry into the marketplace at any time.

Recent releases of Linux seem to be addressing the non-hacker user base as they include clones of popular windows applications (word processors, spreadsheets, etc.), provide seamless installation and configuration options, and even have made strides towards supporting games under Linux. Appendix B shows a chart outlining the installation process for Mandrake Linux 8.1, Windows 98SE (Second Edition), and the recently released Windows XP. As you can see, the most recent release of Linux meets or exceeds

the capabilities and user-friendliness of the most popular commercial operating systems. In some cases, Linux's handling of hardware is superior to the commercial equivalent⁴¹. What we see here is the increasing momentum of the open source movement. Since open source required wide-scale Internet access and bandwidth in order to realize its potential as an alternative to commercial software, it has been playing catch-up for a number of years. However, with every additional release of Linux and other open source software, we see the gap between commercial software and free software close. As a culture of resistance to Internet commercialization, the open source movement represents the best hope for rebuffing the attempted conversion of cyberspace into a giant cyber-mall. If free software is not a viable alternative for the majority of users at this point in time, within a short span of time, it will be. For some users, free software is part of their everyday existence and even regarded as a "right". Regardless of whether software was intended to be free, there are a large group of users who take it upon themselves to make it free. Those users are often referred to as "pirates", and they form the focus of our next chapter.

⁴¹ 3DFX, recently bought by nVidia has a line of video cards called "Voodoo" which are no longer officially supported by Windows. However, since a large number of users have these cards, the Linux drivers for these devices are up to date and continually supported. There are drivers for 3DFX cards available for Windows, but they require specialized configuration and installation and are not packaged with the operating system itself.

Chapter 6: Cultures of Resistance: File Sharing, Warez, Hackers, and Crackers

Introduction

In this chapter, I will examine the variety of communities that exist in the shady area outside the law. They range from those communities whose activities have been outlawed by capital (in the case of file sharing networks) to those who specifically target business (in the case of ‘crackers’). The issues surrounding these communities generate much debate and discussion and over the past few years they have entered the public consciousness as terms like MP3, firewall, hacker, and file sharing enter the common vocabulary. Since many people are totally unfamiliar with these communities, I will try to shed light on what is often referred to as the “underground” of the Internet. We will begin our examination with the popular file sharing networks, before moving into the shadier realms of piracy and cracking. What we will keep in mind when we look at these various communities is the value of these techniques as tools of resistance. What we will find is that these communities do not represent overt pockets of resistance, but rather cultures of resistance that are most effective simply because they offer an alternative space to that of the commercial mainstream.

File Sharing

File sharing has been one of the core applications on the Internet since its inception.

Even in the precursor to the Internet, the ARPANET, resource sharing⁴² was a core concept. Janet Abbate quotes Leonard Kleinrock in *Inventing the Internet*:

Originally, the network was supposed to provide resource sharing.... For example, you would log on to Utah to use their graphics capability there. At one time it was thought maybe you could import the software to your machine and run it locally. But the original concept was that you would do resource [sharing] through the network – that's not really what happened (Abbate, 104).

While file sharing is still thriving, it seems that if the current course continues that it will become another failed experiment, like resource sharing. As we saw earlier, the course that capital is charting for the Internet is headed towards the centralized broadcast model of information dissemination rather than the decentralized P2P model that embraces the very nature of the Internet.

Decentralization is the core concept behind the popularity of file sharing programs on the Internet. These applications fall into the wide category of programs labelled P2P. What all these applications have in common is that they put individual users in direct contact with each other and allow them autonomy in their exchange. P2P communities on the Internet have gained widespread popularity in recent years. These communities represent a different organization of space and relationships over the Internet that has been targeted as a threat to the traditional models put forth by capitalism.

⁴² Resource sharing encompasses sharing of disk space and applications as well as CPU cycles, bandwidth and specialized peripheral equipment.

Before file sharing systems were targeted by commerce, they did not represent a form of “resistance” to capital in the active sense. They were simply virtual congregations of people engaging in an activity that had no chosen opponent. People do not make mixed tapes for each other in order to “stick it to the man” and the same applies for trading MP3 files. However, these activities differ in that trading tapes is an invisible activity. It is difficult for the RIAA (Recording Industry Association of America) to see into your living room and observe you “stealing” their product. However, on the Internet, large scale file trading makes it easy for these entities to take action. Once these activities have been outlawed, they take on a distinctly different meaning.

The culture of online file trading has grown exponentially in popularity in the past few years. At its peak, Napster had over 20 million users and MP3 was the most searched-for term on the Internet. The sheer number of people involved and the scale of the activity elevates it beyond a merely functional phenomenon. In other words, file trading has grown beyond simply a technical function that can be performed and into an activity that has become part of people’s routine. The fact that many of the popular services have been shut down or drastically restricted and yet file sharing continues to thrive indicates that the culture is more than just a passing fad. We might conclude that the continued use of file sharing software after the closing of popular services points to a change in the nature of the culture into what I termed earlier as a culture of resistance.

In a culture of resistance, there is not necessarily a defined opposition to commercial entities. Instead, these cultures are antithetical to capital by their very nature and pose

threats to commerce by their very existence, regardless of the intents of their citizens. The threat to capital is very real, and their zealous pursuit of legal action against these online communities proves their realization that these cultures cannot continue to exist if commerce on the Internet is to succeed.

If file sharing is deemed to be illegal (as it has been in many court cases), then how does it continue to exist and resist extinction? How do users manage to elude prosecution and yet maintain an easily accessible and rich network of files? At this point, a description of various file sharing systems and a brief record of the evolution of the recent file sharing phenomenon should clarify the situation.

How does it work?

File sharing systems operate on a P2P basis rather than the standard client-server configuration. Peer-to-peer applications encompass all of those applications that create direct point-to-point connections between users on the Internet. In a standard client-server environment a client connects to a server and requests information which is then transmitted to the client. This is similar to the broadcast model, in which many users all connect to a central server and obtain their information from the same place. However, a P2P session involves a direct connection between two users in which information is transmitted directly between two IP addresses without the interaction of an intermediate server. This kind of interaction allows for an efficient and simple method of communicating information. Users can easily chat, exchange files, messages, or even

play games. In newer P2P systems, data can be transferred from many users to the user requesting the file. This has the effect of increasing overall system stability.

Why decentralize?

There are reasons that all of these file trading systems embrace the P2P model in one form or another. A decentralized model makes a network much more resilient both by reducing bottlenecks and creating redundant connections. Users pass search requests between themselves without the aid of a central server, and once a transfer is initiated the data passes directly from one user to another. In more recent P2P systems, a transfer with all users matching the search request is initiated which creates even greater stability and optimizes bandwidth usage. The greatest advantage that decentralization offers to a community of resistance is its inability to be targeted by capital. Its “location” in cyberspace changes from second-to-second as new users join and others leave, constantly changing the shape and content of the network. There is no central server to shut down, no company to sue – just thousands of individual users whose combined bandwidth and disk space create a complex and resource-rich network. Figure 1 on the following page illustrates the difference between Napster and Gnutella.

While there are countless variants of P2P file sharing applications that have emerged in the past few years, profiling a few of the key players and new developments will help to see the direction that these applications are taking.

Napster-like System

Gnutella-like System

Figure 1. Illustrating the difference between Napster and Gnutella.

Napster

Napster was by far the most popular peer-to-peer file sharing system. Its simplicity was its greatest asset. It provided a searchable database of thousands of users' libraries of music and allowed users to exchange files directly with each other. It was a free program unsupported by advertising. Near the end of its existence, open source clones of Napster began to emerge. Napster-like networks like MusicCity began to emerge⁴³ but ultimately, the courts sealed Napster's fate through a series of judgements that found the service guilty of condoning copyright infringement. Napster claims that it will re-launch its commercial-friendly service sometime in 2002, at which time its viability as a commercial service will be put to the test.

Despite its popularity, Napster was unable to resist the assault by capital and the courts. Its fundamental flaw lies in the fact that it relied on a central server to co-ordinate the file sharing activities of its users. When Napster users logged onto the system, a list of their files was sent to the central database. Users performed searches on the master database, and when they found a file they wanted to download, they could initiate a direct connection with the user who had the file. However, because it relied on the central database for its operation, that database became a target for the courts. It was easy to shut down the service because it had a visible face that could be seen.

⁴³ MusicCity has gone on to pioneer the popular Morpheus file sharing program which has only recently come under attack by the RIAA.

To illustrate how this system works, I outline a typical Napster session:

1. Users log on to the system using a username and password.
2. Napster client sends a list of shared files to the central server. The server then updates its database with the new files.
3. Users perform searches on the central database. Search results are returned to the client software.
4. If a user sees a desired song, they click on the desired song and a P2P file transfer is initiated. Data is sent directly between the user hosting the file and the user requesting the file without going through the central server⁴⁴. Even if a user logs off the Napster server, the transfer will continue.

In a Napster-like system, the central database plays a critical role in the operation of the system. In contrast, Gnutella systems are decentralized and contain no central server.

Gnutella

Developed by Nullsoft⁴⁵ in 1999, the Gnutella protocol offers a distinctly different approach from that of Napster. When it was initially released to the public in 1999, it was yanked days later after parent company AOL/Time Warner realized its potential for damaging intellectual property revenues. However, since Gnutella is open source, it was

⁴⁴ This was an major part of Napster's defense. They claimed that they were simply brokering transactions, not storing or distributing any copyrighted material.

⁴⁵ Nullsoft also makes the most popular MP3 player software for Windows – "Winamp".

too late. There are now countless Gnutella “servants”⁴⁶ that exist, with new variations emerging all the time.

Gnutella differs from Napster in a number of key ways. There is no network to log onto – no authentication. There is no server that co-ordinates activity and no gate to keep. Users need only to find the IP address of any user connected to the network in order to get hooked into the loop. Many web sites offer permanently connected nodes that people can connect to in order to gain access to the network. The complete decentralization and distribution makes the Gnutella network essentially immune from attack. It is not a perfect system though, since it relies on the efforts of many volunteer programmers and the presence of a large number of users in order to become a useful network.

To illustrate the contrast between Gnutella and Napster, I outline a typical Gnutella session:

1. Gnutella “servant” software is started. There is no server to log onto or be authenticated by.
2. Users find an entrance node, either by polling a host server that keeps a list of Gnutella servants, or by finding an active node on IRC, USENET, or by simply asking a friend. After connecting to one node, a cascade effect allows users to see

⁴⁶ Because there are no servers involved in a Gnutella network, each node in the network is called a “servant”, which is a combination of both client and server. In a distributed network, nodes share work equally.

more and more nodes as they relay to each other the list of all known network nodes⁴⁷.

3. Users issue search requests, which are broadcast to all nodes they are connected to. These nodes relay the message to their neighbours, and this repeats until the message's TTL (Time To Live) expires⁴⁸.
4. Users who have results matching the request return results to the requesting node.
5. Users can initiate direct file transfers with nodes that have matching files.

The critical difference between the systems is that in the Gnutella system, there is no server interaction involved. Nodes negotiate searches and transfers amongst themselves without the need for a central controlling authority. On the surface it appears that decentralized file sharing networks are the ideal means of resistance. However, many critics cite long search times, bandwidth hogging because of search flooding, and a lack of reliable content sources as reasons why it is not a true threat to commercial activity on the Internet. However, we should not discount the interest of users in this technology. The user base for decentralized P2P technologies exploded after the shut down of Napster, illustrating that people were still interested in trading files. Gnutella and other new file sharing systems go beyond Napster's preoccupation with MP3 files. Users can trade anything from E-books, to movies, to software using Gnutella and other file sharing applications.

⁴⁷ For example, if I know John is on the network, I tell him I'm available. He tells me that Mary, Sue, and Jim are also on the network. In turn, Mary, Sue, and Jim also relay who they know is on the network, and so on.

⁴⁸ Each message contains a TTL, it is decremented each time the message is passed on by another node. When it reaches zero, the message is no longer broadcast. This prevents the network from being flooded with too many search requests.

Other Variants

Since the explosion of P2P popularity in the past few years, countless variations of file sharing applications have emerged in cyberspace. Many of them seek to build upon the concepts that Napster popularized, but at the same time they try to improve upon some of its faults. Many have abandoned the central server model that Napster adopted, and have embraced the decentralized P2P model of Gnutella. What many seek to address is the problem of freeloading⁴⁹. While some people like Clay Shirky believe that freeloading is not a problem in cyberspace given the limitless nature of bandwidth, we might argue that it can undermine the viability of the network by concentrating content in particular areas. Even if all users share their content, single P2P connections between only two users do not utilize the potential of the network to its fullest. By increasing the distribution of content, you create greater stability by easing the stress on a particular node and optimize bandwidth usage by limiting the number of idle connections. Let's look at an example:

⁴⁹ We discussed freeloading in Chapter 2 when we referenced the "Tragedy of the Commons".

Figure 2. File transfer from multiple sources.

In a regular P2P situation, if I search for item A, and receive 10 results ranked by their speed, in all likelihood I will choose the one with the greatest speed. However, if the item I am searching for is popular, many other users may follow the same logic and connect to the same user. This results in a high transfer load for that user, which could slow his connection to a halt or cause it to crash. In a more distributed model, multiple search results for the same file do not appear, but rather files are ranked by their availability (ie. number of matches). When a transfer is initiated, the file is downloaded simultaneously from all available sources. This results in greater bandwidth efficiency for all parties involved. For those sending the file, they can send at a slower rate because they only need to send a smaller portion of the file. For the person downloading the file, this results in a more efficient use of bandwidth as well. Instead of a single connection which may only use a portion of available bandwidth, many connections can be initiated that maximize bandwidth usage. For example, if a single connection to a user with a fast connection is at 50 K/s, this allows for 1 MB of data to be transferred in 20 seconds. However, if 10 connections are established to a variety of users, and only 20% of these users have fast connections, then the combined bandwidth totals 140 K/s ($8 \times 5\text{K/s} + 2 \times 50\text{ K/s}$) which results in a transfer time of less than 10 seconds. What we see here is a critical counterargument to the idea that centralized private networks are more efficient than decentralized public networks. In reality, with proper co-ordination, the efficiency and speed of P2P networks far exceeds the traditional client-server model that is the standard in cyberspace.

There are a few programs which employ this new approach: iMesh, eDonkey2000, and Morpheus all allow transfers from multiple sources in order to improve efficiency. In addition to improving bandwidth efficiency, it creates greater stability and reliability in the network by increasing redundancy. If one user logs off in mid-transfer, it does not abort the entire process, but instead that users' load is distributed across the remaining nodes.

Freenet⁵⁰

Developed by Ian Clarke at the University of Edinburgh in 1997, Freenet proposes a total alternative to the restricted commercial Internet. It goes beyond being a simple file sharing application and aims to be a complete alternative to the WWW and the rest of the commercial Internet. Rather than transfer files via HTTP (Hyper Text Transfer Protocol) like Gnutella or Napster, it utilizes a proprietary protocol that is private and secure.

It differs from the other applications in that it doesn't aim simply to provide a method to exchange files but a totally alternative infrastructure to that of the established Internet. According to Freenet's website, their network possesses the following attributes⁵¹:

- **Highly survivable:** All internal processes are completely anonymized and decentralized across the global network, making it virtually impossible for an attacker to destroy information or take control of the system.

⁵⁰ Freenet in this context refers to the protocol developed by Ian Clarke and not to community based free dial-up Internet access popular in many municipalities.

⁵¹ These attributes are taken directly from <http://freenet.sourceforge.net/index.php?page=whatis>. Last accessed 12/08/2001.

- **Private:** Freenet makes it extremely difficult for anyone to spy on the information that you are viewing, publishing, or storing.
- **Secure:** Information stored in Freenet is protected by strong cryptography against malicious tampering or counterfeiting.
- **Efficient:** Freenet dynamically replicates and relocates information in response to demand to provide efficient service and minimal bandwidth usage regardless of load. Significantly, Freenet generally requires $\log(n)$ time to retrieve a piece of information in a network of size n ⁵².

The aims of Freenet are clearly anti-commercial and even anti-copyright. Like open source, it goes beyond being an application and becomes a kind of ideology. Freenet certainly has links to the open source community given that it is an open source program itself and it is protected under the GNU GPL. The open source community and the Freenet users represent a similar ideology that rejects the imposition of controls on a space that has traditionally been free and open. These communities differ from the others discussed (Gnutella, Napster) in that they have a clear philosophy that guides their actions and bonds members of the community together. In an application based community, the intent to resist commercialization or any communal goal is difficult to assign. In many ways, the importance of file sharing applications in a resistance movement is that they threaten capital and undermine the viability of commercial applications in cyberspace. This kind of threatening characterization is also an element of our next community, the 'warez' community.

⁵² What this means is that as the network size increases, the search time does not increase at the same rate. At a certain point search times level off.

Warez

One of the largest cultures of resistance on the Internet is the software piracy community – the warez (pronounced ‘wares’) community. It seems strange to describe a loose collection of people practising an illegal activity as a community, but in a very real sense these people do form one of the oldest and most resilient digital communities. The ease with which digital information is copied and the desire to get something for free certainly made piracy one of the first things to emerge in the history of computing. Networks of pirates have existed long before the popularization of the Internet, and the nature of their network may ensure that they continue to exist as long as there is software to pirate.

Rooted in Echomail

Once again we find the roots of this network in the BBS (Bulletin Board System) community. Pirate distribution networks still consist mostly of BBSes rather than websites or FTP (File Transfer Protocol) sites. The distribution system mirrors the operation of echomail systems that were the primary method of passing information between BBSes. FidoNet was (and I suppose still is) the largest echomail network. Users could send messages to any BBS, anywhere in the world – making it the pre-Internet equivalent of USENET⁵³. However, it is the organization of the network that relates to pirates, so let’s take a look at how it operates.

⁵³ USENET is a system of newsgroups that operate quite similarly to BBS message boards.

Figure 3. A warez distribution network.

A central “backbone” provides a master list of groups that BBSes can carry. Local groups may be available in specific areas but not worldwide. A system of regional hubs distribute messages to individual BBSes. A BBS polls its regional hub and receives mail packets bundled with all the new messages for the groups that the particular BBS carries. In the same session, it sends any new messages to the hub to be bundled and sent to other regional hubs and other local BBSes. Through a relay system, the information propagates around the world.

What is relevant to piracy networks is the system of hubs and nodes. A pirate network uses a similar system of regional distribution BBSes and “couriers” to propagate their latest release. With the rise of the Internet, BBSes are not the sole destination for warez. Couriers now deliver warez not only to BBSes, but onto the Internet via USENET, IRC, and FTP. Combine this system of official couriers whose sole job it is to upload pirated software to various locations with the power of P2P file sharing applications and the ability for warez to travel across the world is seemingly unstoppable.

Where does it come from?

The original source of the software comes from cracking groups which specialize in obtaining commercial software before its release, removing copy protection, packaging the software into easily downloadable chunks, as well as removing extraneous portions of the software to reduce size (called ‘ripping’). Generally, the members of these

communities are workers in the software industry who have access to products before their release (beta testers, developers, journalists)⁵⁴.

Ripping

Ripping is the act of extracting superfluous data from software in order to reduce program size and as a result, decrease download time. Even at high speed, a piece of software that was hundreds of megabytes in size may take a number of hours to download, reducing the possible audience size to a mere handful of people. As bandwidth increases, the frequency of ISO versions (a complete CD image) of software appearing on warez sites also increases.

Games are the most common form of software to be ripped, since they contain large movies and sounds that can either be compressed for transfer (and later require decompression) or removed from the game completely. A ripped version of a game can be considerably smaller in size when compared with the original. A full-CD game (650MB) may contain a few hundred megabytes of video and sound, which if removed can reduce the size of the game after compression to below 100MB, drastically reducing download times. Short download times are becoming increasingly irrelevant with the widespread propagation of high speed and broadband services, however in the age of modems (which we are nearing the end of) short download times are critical to the survival and success of a piracy network. Short download times reduce long distance costs for couriers who must upload games to distant hosts, they speed up the propagation

⁵⁴ Wired magazine provides an interesting and in-depth profile on a member of a cracking group in their 1997 article "Warez Wars".

of information, and increase the size of the audience that may access a particular piece of software. Often, pirates utilize commercial services that offer free web hosting in order to store their warez. However, since hosting commercial software on a public web site violates the terms of service agreements of these providers, warez often exist on these servers for an extremely short period of time (usually less than 24 hours).

In addition to ripping material from warez, cracking groups need to package the software into an easy to install format. With data missing and a lack of the original CD, it is unlikely that the original install program will work with the newly pirated piece of software. Cracking groups employ programmers who develop flashy install programs to decompress the game and set up the necessary registry entries⁵⁵. Often, sound files, rather than being ripped from a game, are compressed using MP3 technology and then decompressed at the time of install. This creates a lengthier install process, but decreases the amount of time you have to spend downloading because of greater compression. When bandwidth is limited, transferring download time to install time is a worthwhile trade-off.

The question remains, are these groups of pirates targeting commercial software vendors and actively resisting their practices of selling their wares? The answer is likely 'No'. There are a number of factors that can lead us to this conclusion. Firstly, the members of these cracking groups follow closely with the same "hacker code of conduct" in which respect rather than profit or political aims drive actions. Secondly, we have the absence of

⁵⁵ The Windows registry is a file that tracks the details of all installed hardware and software on a machine.

any political diatribes in any of the releases or in the distributed information about the group.

NFO-rmation

Each 'release' contains an NFO (pronounced "info") file, which is a sort of flag planted by a group into a program. It is uncommon to see the same piece of software released by different cracking groups. Groups compete for prestige and status by trying to be the first to release a program. Many sites refer to 0-day warez, meaning programs that have been cracked and uploaded less than 24 hours after they were available from their commercial source (McCandless, 1997). These groups take these releases seriously, they may be hobby pirates, but they consider themselves professionals:

NFO files do more than brag or supply installation instructions; they testify that the ware is a bona fide release, guaranteed to work. And this is more than just posturing; a group's reputation is paramount. Each release is painstakingly beta-tested. These are their products now, their labors of love. Nobody wants to find a "bad crack" in his hands after a seven-hour download. Nobody wants to be accused of being "unprofessional." (McCandless, 1997)

If we refer to Appendix C, we can see a sample of an NFO file that was released with a recent game by the cracking group *MYTH*⁵⁶. There are a few areas that I would like to draw attention to. First, near the end of the file, we notice the following paragraph:

And always remember: we do this just for FUN. We are against any profit or commercialisation of piracy. In fact, we BUY all our own games, as we love originals. And if you like this game, BUY it. We did!

⁵⁶ Cracking groups often give themselves colourful names like: Myth, Razor 1911, and Class.

It is interesting to see that the pirates are resisting the commercialization of their own community, presumably by members of the community who are interested in profiting from stolen software. They seem oblivious to the fact that their activity of pirating software costs the software industry billions every year and that the Internet plays a vital role in the widespread distribution of their warez. It seems that the general consensus among pirates is that developers of software need financial support in order to continue to develop quality programs.

It seems plausible that since their community operates on a different model of “success” than the standard capitalist model, they place no value on the price of software and so see no value in a commercial system on the Internet. As we see from the NFO file, entrance into a cracking group is only for the “elite⁵⁷”. They request people with extremely specialized and technical skills and the willingness to volunteer their services to the group. There is also reference to the group’s refusal to comply with popular Internet conventions (hosting a web site, uploading to the web or IRC). It seems likely that the group rejects the mainstream web and chooses to exist in the “underground” of cyberspace.

Regardless of whether or not pirates are targeting the commercial powers on the Internet, we might take a moment to examine the effectiveness of software piracy as a means of resistance. Certainly, the first problem that arises is the legality of the activity. It seems

⁵⁷ To accentuate the elite nature of these communities it is worthwhile noting that the cracking scene emerged from the “demo scene” in which programmers organized conventions where they would display “demos” which were highly complex graphically intense programs that were set to music. They were often written exclusively in assembly code (the language of computers) in order to optimize speed.

difficult to advocate for the practice of an illegal activity in opposition to the commercialization of cyberspace. At its root though, piracy has a very sound premise as a resistance tactic – steal software that you would otherwise have to pay for and you remove revenue from the pockets of software companies that would seek to impose their will on cyberspace. However, there is an unintended consequence to pirating commercial software in that while it does deprive companies of revenue for sales of software, it still creates a user-base that is familiar with the program and can create a product loyalty that may transfer into future sales or peripheral revenue from supporting users of pirated versions of their software. In addition, it maintains the existing standard and encourages software development on the same platform. In essence, by stealing Microsoft's programs you help to ensure their survival in the consumer market. However, the continued practice of piracy ensures the survival of the communities that form the core of cyber-values: free access to information and decentralized standards.

Hackers and Crackers

The popular usage of "hacker" has a distinctly different meaning from the original meaning of the term. In its original use, a hacker was someone who wrote program code, whereas in the popular vocabulary a hacker is someone who attacks and breaks into computer systems. The proper term for these people are "crackers". They are also different from the crackers who partake in the game scene. What these crackers undertake are the mythologized tasks of stealing passwords, breaking into computer systems, sabotaging data, vandalizing websites, unleashing computer worms, or "mail bombing" a target. There is growing popularity for the term "hacktivism" which combines the ideals

of activists with the expertise of hackers. These hacktivists have a number of very powerful tools in their arsenal if they chose to launch an assault against capital. Most of the attacks against commercial sites have taken the form of denial of service (DOS) attacks which incapacitate a particular web site for a short period of time. Yahoo has been the target, along with Amazon.com and other large commercial websites (CNET, 2000).

Cyber-vandalism is also a popular method of striking back at the establishment. Many websites have been the victims of the stray writings of a disgruntled hacktivist. However, despite the apparent power of these techniques, these sorts of attacks are quite uncommon. A brief examination of the various weapons may expose the reason for the lack of use in the fight against capital.

System Hacking

Breaking into computer systems and stealing passwords or destroying data is not only extremely difficult but also extremely risky. It seems unlikely that many users would be willing to undertake this kind of risk for somewhat dubious rewards. There is no reason for resisters to steal information from capital, and any data damage they might inflict would only be a temporary setback for a large commercial entity.

Mail bombs, Cyber-Vandalism and Denial of Service Attacks

Cyber-vandalism requires access to a system in the same manner as system hacking. It is of limited effectiveness and little more than a nuisance to system operators. Mail bombings on the other hand are easily carried out and can cause serious system disruption

with little risk of being detected if the proper precautions are taken. A mail bombing entails sending a large volume of e-mail to a particular mail server, thus clogging the server and preventing any other mail from getting through. Denial of service attacks work in a similar method, only instead of flooding a server with e-mails, it is instead flooded with web requests. While all of these have the potential to affect business in the short term, none of them have any long-term consequences for commercial entities.

Viruses, Worms, and Trojans

By far the most deadly weapon available to crackers is the dreaded computer virus/worm/trojan. All of these programs work in similar ways in that they are designed to infect a system, destroy data and disrupt system operations. They operate on a stealth level and are generally undetectable to users until it is too late. Because these kinds of programs are difficult to write, they are not commonly used by anti-commercial hackers.

Virtual violence as a last resort

If anti-commercial hacktivists choose to employ the methods discussed above in their quest to rid cyberspace of commerce, they will likely do more harm than good. A perceived security threat can result in increased security and surveillance – things that are not good for open networks. As a last resort, they can be effective tools but by the time they become effective tools commercial interests may already have a solid foothold in cyberspace. Hack attacks will not deter capital from colonizing cyberspace, it may in fact just spur on a security improvement binge before continuing with the transformation. When users simply ignore the commercial services and embrace the free services

available throughout the Internet, they undermine the viability of commerce on the Internet. Participating in communities like the warez culture and P2P file sharing keep the open origins of the Internet alive. The greatest threat to openness is the migration of users from free services to pay services. When users start paying for their music, paying for their software, shopping instead of sharing, we can then say that the Internet as we knew it is dead. The single most important thing users can do to resist commercialization is engage themselves in the communities that exist outside of the mainstream Internet that has been renovated by commercial interests. By simply not partaking in commercial services and embracing the rich communities that have existed since the birth of cyberspace users not only ensure the survival of these communities but they enrich them through their participation.

Chapter 7: Working Towards A Democratic Future For The Internet

Overview

By this point in the analysis, it should be easy to construct a narrative of events that lead us to the present day situation. The Internet was born out of a US military project designed to create a network that could survive a nuclear attack. Most of the applications and infrastructure were publicly funded and developed by a community of researchers, graduate students and government workers. The Internet remained largely the domain of government and universities until its popularity explosion in the mid-1990s. At that point, commercial interest in this new medium skyrocketed and the resulting dot-com boom made cyberspace the newest frontier for business. As private interests took control of the actual network backbones and government relinquished control, there was also an increased interest by major corporations like Microsoft. Media mergers among companies like AOL/Time Warner drew even more corporate power into the Internet arena. All the while, the users that made the Internet popular in the first place were struggling to maintain their digital “way of life” alongside the bombardment of new commercial products and services. The clash between commerce and the commons became evident in the Napster controversy that began in 1999. File sharing on the

Internet was interpreted as copyright infringement in the commercial world. Alongside these developments, programmers involved in the Open Source movement were making headway with the development of their open source operating system Linux. Private networks did mean a proliferation of high speed Internet access, which is a boon to software pirates. However, all these movements must compete with the dominant force of commerce, which not only owns and controls the network, but also much of the content that is transmitted over the network. These alternative communities occupy only the space that capital allows them, as long as they abide by the rules laid out by capital. I have argued that participation in these communities is vital to their survival, and integral in opposition commercialization on the Internet. These alternative communities provide opposition to commerce both by proposing alternatives to the commercial model, and also by undermining the viability of commercial networks. Involvement in virtual communities as citizens rather than consumers has benefits beyond simply the possibility of eliminating banner advertisements – it creates an engaged populace who are more likely to participate actively in their real world communities as well.

So where do we stand at the present? While a focused discussion about these kinds of communities can create the illusion of vibrance, the fact remains that these communities are for the large part marginal and out of the public eye. Few users will have any knowledge of “warez” or Open Source. Of course, open source software is increasing in popularity, and file sharing has entered the mainstream as a popular activity. What we can hope is that users will embrace these communities so that they can continue survive and even thrive in one of the last truly open spaces.

Do It Yourself

One of the central themes that have emerged over the course of this analysis is the notion of activity. In all these communities, users are required to take an active role. In contrast to the passivity of broadcast media and consumer culture, these cultures demand activity and interest on behalf of their citizens. There is a prominent sense of DIY (Do It Yourself) in these communities. Don't like MS Windows? Build your own operating system. I would argue that this ideal should be expanded beyond just software production and into cultural production – after all, the Internet is supposed to be the greatest publishing medium ever invented. Why not use it as a tool for cultural production and resistance?

File sharing is a powerful tool and a vibrant resistance community. It is clearly received as a threat by capital, as organizations like the RIAA launch lawsuit after lawsuit in an attempt to quell the growing popularity of these communities. However, perhaps users need to go beyond simply exchanging music from commercial artists. Perhaps users should embrace a culture of DIY and begin to create and exchange their own music. The exchange of their own music is free from attack by industry organizations (since they do not control the intellectual property in this case), and it also devalues the worth of commercial music by decreasing demand. Of course, no one expects users to give up on commercial music altogether, but getting involved in the production of music can only enrich the online culture and create strength in these communities. Many of these file sharing programs promote themselves on the fact that they provide excellent exposure for

independent artists. Commercial services like MP3.com are capitalizing on the vibrant independent culture on the Internet. They boast thousands of independent musicians who post their songs on their website. Why isn't there a greater independent presence on the file sharing applications? It could be that no one is listening to these artists, but it could also be that many of the users act as consumers and only listen to what is fed to them by the "official" outlets. Producers of independent music should share their files on these services and promote themselves in chat rooms and on message boards associated with these services⁵⁸. A larger audience for artists can only be a good thing, and can translate into income for these artists as the demand for their performances and recordings increases.

DIY does not simply encompass music or software, it also encompasses publishing. If users believe that the web is a wasteland, than perhaps they should put up their own web page full of useful content for free. The more excellent free web pages that exist, the less demand there is for commercial web pages and commercial content. Like open source software, a non-commercial site that has a connection with its audience can better respond to their needs and provide a much closer representation of their audience's interests. In addition, website models like slashdot.org, where community interaction is key to the very nature of the site are quite successful. Under the slashdot model, the website is reliant on the participation of users to its operation and success. Users not only provide the articles, but they provide feedback and commentary regarding the posted

⁵⁸ This is actually one of the central premises that Napster was founded on, but it was eclipsed by the lawsuits surrounding the trading of commercial music.

articles. This kind of dialogue creates a very useful and informative website that is not far removed from the kind of participation that is common in BBS communities.

DIY can also extend from the realm of content creation and into the creation of the network itself. Many users have taken it upon themselves to step outside of the Internet defined by capital and build their own networks. There are movements like Freenet that use encryption to build their networks. There are others like the Grassroots TLD (Top Level Domain) movement that are “returning control of the Internet name space back to the people”. They encourage people to set up alternate TLDs on their name servers, a bold move that reclaims control over the “geography” of cyberspace from capital. These alternate TLDs allow different domain extensions other than the standard .com, .org, .net that are common on the Internet.

In an even more ambitious undertaking, there are many wireless networks emerging that are totally independent from the Internet. Often termed “Neighbourhood Area Networks” (NANs) these networks use wireless technology to link many households in an area together into a mini-Internet. Households with an Internet connection can act as a gateway to the Internet, but they still maintain total control over their private NAN. It is not difficult to imagine with the improvements in wireless technology that interconnections between NANs could be possible, and that theoretically a totally alternative network to the Internet could emerge – built totally by individual users from the ground up.

What many of these DIY approaches utilize is some form of technology that does not rely on capital, or that makes them invisible from the eyes of commerce. Wireless technology eliminates the need for fibre-optic backbones and network cables altogether. Encryption allows data to be sent with total privacy. The combination of these technologies, along with P2P technology could create a formidable opposition network to the commercial Internet. Imagine a totally decentralized wireless P2P network that employed strong encryption to encode data. Information could be transferred between any point on earth without fear of interception or disruption. The ability of commerce or government to control the activities on these networks would be totally nullified. In the wake of the September 11th attacks, concern over the use of networks to co-ordinate terrorist activity has been heightened. Therefore, it is difficult to imagine in the current political climate that a network of this kind would be allowed to exist. This kind of network affords too much power to individuals and leaves government with no power to control the actions of its citizens. It is therefore important to balance the needs of communities with the welfare of the state – do individual users require strong encryption to protect them from potential surveillance, or is it merely a ruse to mask illegal activity (like piracy for instance)? What I argue for here is not for “crypto-anarchy”, but a resistance to the commodification of cyberspace and the pursuit of meaningful community interactions.

Gaining Popularity

It seems that users across the world are beginning to realize the potential of open networks and open source. The divisions created by commercial systems, where wealth disparities drive people apart rather than draw them together. Open networks are inclusive, and they have the potential to involve all members of society, not just those who can afford the latest technology. As Tetzlaff noted, many software publishers upload their software to third world servers (Tetzlaff, 2000). If the digital divide is going to be bridged, free software might be the way to do it. An operating system like Linux is not only free, but compared to Windows, it requires very little hardware to run. Computer users in the third world would have an easier time of running Linux without the latest technology. Running Linux in the third world is not just speculation, there are countless instances of Linux adoption in third world countries⁵⁹. In many countries, western copyright laws are less than revered. Software piracy in countries like China and Korea is rampant. We might foresee that the transition to high priced licensing models that companies like Microsoft favour will be difficult at best.

Microsoft is scared. It may be hard to prove the authenticity of the mythical “Halloween documents”⁶⁰ that expose Microsoft’s fear of Linux, but they are not hard to believe given public statements by Microsoft executives stating that open source software was a “threat to innovation”(Bloomberg News, 2001). The Halloween documents expose

⁵⁹ Wired has an article entitled, “Africa: The Linux Continent?” available online at: <http://www.wired.com/news/technology/0,1282,38749,00.html>. Last accessed: 12/08/2001.

⁶⁰ You can read the leaked Microsoft memo online at: <http://www.opensource.org/halloween>. Last accessed: 12/08/2001.

Microsoft's strategy of "de-commoditising"⁶¹ protocols in order to counter the Linux threat. They seek to close protocols and architectures in order to maintain control and profits in the operating system market. Rather than open source being the threat to innovation, it becomes clear that the closed software development model is holding the industry back.

However, it seems that there is a glimmer of hope in this situation. A report by David Wheeler shows open source software occupying the top spot in market share in a number of categories (Wheeler, 2001). Linux is also the fastest growing operating system in terms of market share, and it is closing in on Microsoft's Windows monopoly. If there was any debate about why developers should choose open source software, they need look no further than the market statistics. The numbers speak for themselves.

Moving Beyond Bits and Bytes

I think that what has become apparent over the course of this analysis is that the importance of resistance has consequences that lie outside the realm of cyberspace. In some ways, the quibble over the content of a digital computer network can seem trivial in contrast to the dire situations that we face in the real world. However, if we view cyberspace as a model for the real world, we can learn many valuable lessons. It can provide us with a mirror to what is going on around us, as well as what has happened in history. Resisting commercialization in cyberspace is just one of many battles that face us as citizens in the 21st century. We must also face the accelerating privatization of our

⁶¹ In this context, commoditisation means to make something so cheap that it is essentially free. Microsoft accuses Linux of commoditising protocols, and blames their success on commoditised protocols.

public services and the commodification of both our public and private spaces. Perhaps the task of tackling issues in the real world is too daunting to begin with, and perhaps cyberspace provides a relatively “safe” venue in which to take the first steps towards reclaiming space lost to wide scale corporatization. The stakes are certainly not as high on the Internet as they are in the real world. If BBSes become extinct, or e-mail becomes a pay-per service, nobody dies. However, if the Internet is going to live up to even a small fraction of the many accolades that have been lauded upon it as a revolutionary force, then perhaps the stakes are higher than they seem.

To realize the potential of the Internet for democracy, equity, and education it needs open architecture and widespread participation. If the Internet is commercialized, then even when (if ever) the trickle-down arrives, it will be too late. The promise of the Internet is that it has the potential to pose an alternative to the default organizing principle of economics. If we step outside the picket fences of commerce’s gated communities, we discover that cultures of resistance do exist, and that there are alternatives to the commercial default that is being proposed. It is up to us as consumers to reclaim our roles as citizens. And it is up to us as citizens of cyberspace to reclaim the commons that is rightfully ours from the hands of capital.

Glossary

AOL	America On-Line
ARPANET	Advanced Research Projects Agency Network
BBS	Bulletin Board System
CD-R	A writeable Compact Disc
CPU	Central Processing Unit
Cracker	Someone who breaks copy protection on programs, or breaks into computer systems
DOS Attack	Denial of Service Attack
DIY	Do It Yourself
Door	A BBS online game
Echomail	A system of message groups where mail is 'bounced' between BBSes
FidoNet	A worldwide system of Echomail
FSF	Free Software Foundation
FTP	File Transfer Protocol
GB	Gigabyte
GNU	GNU's Not Unix
Gnutella	A decentralized file sharing program
GPL	General Public License
Hacker	An enthusiastic computer programmer
HTML	Hyper Text Markup Language.
HTTP	Hyper-Text Transfer Protocol
ICANN	Internet Corporation for Assigned Names and Numbers
IRC	Internet Relay Chat
ISO	In this context, it refers to a CD image file
MB	Megabyte
MS	Microsoft
NFO	"Info" file distributed with pirated software
P2P	Peer to peer
RIAA	Recording Industry Association of America
TLD	Top Level Domain
USENET	Internet newsgroups
Warez	Pirated software
WWW	World Wide Web

Appendices

Appendix A – A Sample of Source Code

```
#include
class Person

{
    public:
        void SetAge(int Age); // Set the age
        void SetName(char* chrName); // Set the name
        char* GetName(); // get the name

        int GetAge(); // get the age

        void Greeting1(); // Say "Hello!"
        void SayName(); // Say "My name is "
        void Goodbye(); // Say "Good bye!"
        void SayAge(); // Say " I am years old!"
    private:
        char* pName;
        unsigned int pAge;
};
```

Appendix B – Installation Comparison Table

Component	Windows 98SE	Windows XP	Mandrake Linux 8.1
Video Card	Not Detected	Auto Detected	Auto Detected
Monitor	Not Detected	Auto Detected	Auto Detected
Chipset and Bus	Required Patch	Auto Detected	Auto Detected
Sound Card	Auto Detected	Auto Detected	Required Setup
Printer	Required Setup	Auto Detected	Auto Detected
Peripherals (Web Cams, Scanners)	Auto Detected	Auto Detected	Not Supported
CD Writer	Required Setup	Auto Detected	Auto Detected
Network Card	Required Setup	Auto Detected	Auto Detected
Network Connection	Required Setup	Required Setup	Auto Configured
Drive Partitioning	Required Setup. Cannot read Linux partition.	Auto Configured. Cannot read Linux partition.	Auto Configured. Can read all partitions.
Software Packages	Basic Tools	Basic Tools	Complete Suite
E-Commerce Integration	Limited	Direct Integration	None
License	Restricted Commercial	Restricted Commercial	Open Source
Cost		\$300 USD	Free

Hardware used: AMD K6 2-450Mhz CPU, 128MB RAM, 13GB+4GB+2GB HD, Sound Blaster 16, 3DFX Voodoo3 2000 16MB Video Card, Intel PocketPC USB Web Camera, Canon BJC-210EX Bubblejet Printer.

Appendix C – Sample NFO File

[illegible]

XXXXXX XXXXX (C) XXXXXXX

[illegible]

ALWAYS READ THIS NFO PROPERLY or your e-mails may get DELETED!
Join us now, see below for details ...

Game Notes:

<EXTENSIVE GAME DETAIL CUT OUT>

Ripped:

Movies, music, speech (there are subtitles). We might do addons.

[illegible]

1. Unzip.
2. Unace either manually or use our installer.
3. Run Setup.bat to decompress gamefiles.
4. Start the game with **XXXXX XXXXX.exe**

If the game complains about a missing msvcp60.dll, download it from:
<http://support.microsoft.com/support/kb/articles/Q259/4/03.ASP> (or
 run VC6RedistSetup_enu.exe included in the last zip).

If you want to play multiplayer online, you need to buy the game.

[illegible]

You think you can contribute to the scene too? You have one or more talents in:

- supplying NEW unreleased games (maybe you work at a game/util magazine, courier delivery firm, newspaper, game press/marketing company, distributor, publisher, duplicator, tv/radio show, shop, warehouse, store etc.) You do not need a fast internet connection for the above!
- supplying unreleased NEW store/shop games & have a fast UPLOAD 300k+ internet connection and time to spare on weekday mornings. Of course we shall reimburse you for the costs of the games you buy.
- you are a cracker with lots of experience in Cracking/Debugging/ASM & C/C++. You also can code your OWN tools to automatically remove commercial iso protections like the latest versions of SafeDisc or Securom or VOB or Laserlok or Copylok. Using tools created by others does not count and we check! You will also need advanced knowledge of PE File Formats.
- you are a cracker who can debug and remove the protection known as FADE. You will need to PROVE you have understood this protection totally! People who send .exes they have stolen will be ignored! Better to send us a tool with source which auto removes FADE :)
- coding tools in C/C++/ASM (you have HARD CORE in depth knowledge of the Win32-API, you can code by given specifications etc.) And to have an understanding and can develop methods like API Hooking.
- supplying linux/BSD eggdrop/bnc shells to the group (for free). They should have 2mbit MINIMUM link. We shall require flexible control over the shell. Root access on the box with dynamic ident such as midentd for bncs, but just normal shell accounts are fine for eggdrop shells. All boxes must have legitimate IP's, they should not be running NAT or a firewalling system that will constantly interfere with the link. Ideal shells will have multiple vhosts, reasonably good uptime (20+ days), and a low system load. Public shells such as JEAH.NET or similar with 25+ load averages and 3 day uptimes are not acceptable. The more reverse ips you have the better. We are only interested in LEGIT, NON-HACKED/CARDED shells. These shells will be used only for the purposes listed above and will NOT be used for any kind of 'dump site' or for spreading any kind of releases. We are NOT interested in modem, cable, or DSL shells. The shells should be up 24/7 with minimum downtime for upgrades, etc and should not be overloaded with processes.
- supplying the group (for free) with useful things like hardware, willing female adults etc.
- If you know the difference between reindexing and unpacking large files. Or if you can identify ANY major file formats by looking at the hex byte code of the header. Or if you can tell and show the difference between MPQ & HAPI. And can code your own tools to rip apart the above technologies (to show you fully understand them) then apply at once.
- making trainers for newly released games (menu driven, must work in Win9x and Win2K/WinXP).

If you can meet one or more of those requirements and want to join the finest active group in the scene today, email us.

Use the contact information given below.

Group members get all the advantages and have access to sites with everything one would ever want to leech, for an example: (0day/ISO/VCD/SVCD/DIVX/TV/MP3/PSX/PS2/DC/GBA/GBC/PDA/BOOK/LINUX).

And always remember: we do this just for FUN. We are against any profit or commercialisation of piracy. In fact, we BUY all our own games, as we love originals. And if you like this game, BUY it.

If you think you can fill any of these positions, send an email to the e-mail address below in the contact section.

[illegible]

```

. DEVIANcE . DYNASTY . SOULDRINKER . FTFiSO . NLRIP . NLiSO .
. PARADOX PSX . HYBRiD . RESURS . FCC . SAC . RE:PLAY . FCN .
. MFD . APC . RNS . CORE . LAXITY . FRIHET . BLIZZARD . TFE .
. EGO . COUNCIL . JADE . SOUR . UCF . TWCiSO . VITE . TRDOGS

```

"What makes a rip-group #1?"
"Good rips. Not bigheads."

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