

# **On Sourcescapes and Filescares**

**Towards a Critique of the Political Economy**

**of**

**Free / Open Source Software and Peer-To-Peer File Sharing Networks**

Work in progress, by

Shay David

[sd256@cornell.edu](mailto:sd256@cornell.edu)

---

## 1. Introduction<sup>1</sup>

It would not be an overstatement to say that at the beginning of the 21<sup>st</sup> century we are witnessing the aftershocks of the information-quake that took place over the last fifty years. Evidently, hundreds of millions of computer users and hundreds of thousands of programmers worldwide are building upon the computer and information revolution, and the rise of the network society that came with it, and are actively promoting the next revolutionary wave. By espousing the principles of hackerdom and undertaking a radical shift in their consumption habits, work ethic, and software development methodologies they aim to turn some basic principles of capitalism on their head. This fresh, albeit derivative, revolution is epitomized by the proliferation of new large-scale social alliances, which are mushrooming in various information production fields, and are particularly manifest as two disparate but related socio-technological phenomena: *Free & Open Source Software* (F/OSS) and *peer-to-peer file sharing networks* (P2P). As the two most important socio-technological fads of our time, these new pervasive systems are especially intriguing when considered as a challenge to the market-driven capitalistic control mechanisms that otherwise dominate our economic spheres. In order to understand these phenomena we have to place them along the line that designates the socio-economical process by which the steam engine ceded its primacy to the search engine or, in other words, to situate them in the larger context of the information revolution. Doing so will highlight a transformation of a civilization which has fundamentally gravitated towards information technology, and exemplify what the famous Berkeley sociologist Manuel Castells categorizes as a paradigm shift from industrialism to *informationalism* (2001:157). After several centuries of

---

<sup>1</sup> This paper is the result of two exciting years at the NYU. I feel indebted to my former advisor Riaz Khan, NYU current and former faculty—Stefan Helmreich and Jeff Himpele—and to the many good friends who gave me insightful comments on drafts and sections of this essay.

## On Sourcescapes and Filescales

industrial supremacy that hinged on controlling production processes and the flow of goods, we<sup>2</sup> are now living in an era that is predominated by a new technological organization that revolves around *Information* (Castells 1996:270). Accordingly, informationalism—the onward movement induced by new technologies that involve the generation, storage, and manipulation of information—elevates knowledge and information (and their creation, handling, and exploitation) to a new and pivotal position in capitalism’s historical expansion process. What is more, informationalism is not only an organizing pattern for technology alone, but also an organizational model for society at large, which is briskly changing our material culture. Informationalism is a model that foreshadows the rise of a network society which is understood in this context as the social structure which consists of information networks and is powered by information technologies (Castells 2001:166).

When analyzing the forces that regulate the shift from industrialism to informationalism we find that software in general, and network-enabling software particularly, are the critical technologies at the roots of the new structure and that, to a large degree, powerful software is the fulcrum that enables the Net to become a transformative social structure that arranges humans in new relationships of production, consumption, exchange, competition, power, and desire. It should be natural, therefore, to turn to an investigation of software and its revolutions as a starting point for any investigation that aims to understand the nature of the network society. One may object, of course, to this methodology and claim that software is a substance-less type of digital information technology which, unfortunately, can do very little to ameliorate the misery of billions in the third-world; capitalism’s destruction of the sites of reproduction—family, home, community, ecology, women’s bodies—continues apace while the rich and privileged retreat into a virtual nature that shields them from the real world. I would answer that software and its powerful uses corroborate cultural theories such as Scott Lash’s, which perceive information as a source of power. Moreover, I believe that this power

---

<sup>2</sup> We in this context are the *digerati*—the digital elite. Mostly but not exclusively first-worlders who use digital information technology on a regular basis.

## On Sourcescapes and Filescaapes

can induce changes in the real world and not only in cyberspace; I follow Lash who supposes that because of the disappearance of a constitutive outside to information, its critique—unlike the critique of ideology—“must be inside of information. There is no outside any more.” (Lash 2002:10). Accordingly, in his account on the roles of informationcritque (as he calls it) Lash instructs us that “a critical theory in the information age must also be affirmative and not just negative.” (ibid). One such affirmative critique, which I try to build-upon here, is Arjun Appadurai’s. Appadurai identifies highly transformative socio-technological structures and organizations and names them *Technoscapes*: fluid configurations of technology which fluctuate across previously impervious boundaries. Technoscapes are one of five dimensions of what Appadurai recognizes as global cultural flows, together with ethnoscaapes, mediascaapes, financescaapes, and ideoscaapes. The ‘scaapes’ constitute key building blocks in Appadurai’s framework for exploring fundamental disjunctures between economy, culture, and politics that are stirred up by the complexity of the current global economy (1996:33). The use of the suffix ‘scaapes’ allows Appadurai to point out the fluid, irregular, almost fractal, characteristics of these five dimensions and to note that these interactions are not objectively given relations that are isomorphic from all vantage points, but, rather, that they are deeply perspective-dependant constructs. So, for example, when trying to understand what role search engines, operating systems, or file sharing networks play in our life, mapping the technoscapes is an effective framework for inquiry. But at the same time technoscapes are hard to grasp as they are of uneven surface. Like the winds and the tides that shape the earth, the technological revolutions (the Neolithic, Industrial, and in our case the Informational) shape the socio-technological landscape with uneven and erratic vigor. Consequently, Appadurai commands us that “even an elementary model of global political economy must take into account the deeply disjunctive and profoundly unpredictable relationships among ethnoscaapes, technoscapes, and financescaapes, which are each subject to its own constraints and incentives.” (1996:35).

In this essay I broaden Appadurai's framework and launch a theoretical inquiry in order to investigate in detail a moment in informationalism that gives rise to F/OSS and P2P networks, movements that revolutionize the very basic tenets of the network society and can partially explain this society's disjunctive nature. I suggest that unlike other, more capital-friendly, information technologies, F/OSS and P2P networks do more than simply change the constraints of time and space, shift geographical and industrial borders, or reduce the importance of physicality and rigid structures. The *sourcescapes* and *filescales* that are revealed by an investigation of these once-tacit-by-now-vocal revolutions, I argue, are becoming the theatre of a new socio-economical war whereby battles are fought over the sedated concepts and categories of political economy. The winners in this digital fracas imbue new, sometimes even surprising, meanings into fundamental concepts like economic power, consumer desire, and social identity that extend well beyond Cyberia.

F/OSS is centered on a deep-seated, technocratic, idealism that ensures the entitlement for members of a community to (1) gain access to and (2) be able to contribute to a software development and distribution project. In closed (traditional) software systems the development and use of the source, and hence the sourcescape of the software, are hidden from the software users and are limited to the select few who are paid to program it. In F/OSS, on the contrary, all the users have full access to the source code and are welcome to partake not only in the use of the software but in its creation and modification as well. Due to the prime importance of software in the network society such an inclusion principle implies not only practical meanings like the potential to develop excellent software (e.g. Linux and Apache, which are on a par with if not better than the closed source software) but philosophical and sociological meanings as well. P2P file sharing networks espouse a similar principle of inclusion and sharing from a slightly different perspective. Global P2P networks like Kazaa or Gnutella constitute unique filescales which use software solutions to empower millions of users to simultaneously communicate directly with one another more efficiently than ever before,

## On Sourcescapes and Filescaapes

allowing them to share music, software, images, and movies on an unprecedented scale, as part of an extremely large, fast-growing, and highly visible communal file repository. Just like in the case of F/OSS communities in these expanding networks too—anyone can partake. The striking element which makes both types of systems even more miraculous is the fact that in both F/OSS and P2P file sharing networks the participation does not involve money. Binding F/OSS and P2P networks together allows me not only to contrast the two as a means of inquiry but also to zoom out from the technology itself and develop a set of more general observations.

What happens, then, to the concepts of exchange, exchange-value, use-value, labour, capital, the market, money, commodities, and desire when advanced software and networking technologies amplify human tendency (and ability) to truck and barter and allow users to engage in equal exchange without money being involved? Which new concepts and categories are produced that sustain such a political economic system? Are F/OSS and P2P networks inline, as some have suggested, with modified versions of late capitalistic socio-economical systems in which wealth is produced not by labor but by knowledge and incentives are given not by money but by increase of reputation? They couldn't be, if by that we mean that the basic meanings of the political economic categories we know from capitalism are consistent with their entrenched definitions. Do these technologies corroborate Appadurai's impression of the erratic nature of modern technoscapes?

My critique suggests that the disjunctures and unpredictability that Appadurai notices can be partly explained by noticing a modification in the meaning of the basic political economic categories, a shift that we must trace if we want to truly understand the network society and the rapid changes its technoscapes and financescapes are undergoing in light of these new r/evolutionary forces. To make my point I will scrutinize primary and secondary sources that were published online and offline in recent years by and about key actors in the F/OSS and P2P network arenas and interpret them through

## On Sourcescapes and Filescares

the prism of classic political economic writings (Smith, Marx, Simmel<sup>3</sup>). As we try to get a better view of the filescares and sourcescares involved and to comprehend their dynamics (as an ethic, as a revolution in progress, as radically new society-organizing principles) I will show how new meanings are inscribed and how new political economic categories get produced. Finally, I will bounce off of Baudrillard's ideas and use the altered categories to show how fetishisms of the consumer and of production processes (that superseded Marx's fetishism of the commodity) are diffused and taken over by a new fetishism—fetishism of exchange, and how the dichotomy between consumer and producer is abolished when the fields of knowledge/power and exchange take non-money forms.

The essay is divided into three parts. First (in sections 2 and 3) I give a brief introduction to F/OSS and P2P networks where I concisely discuss their history, highlight the mass participation in them, and explain some key data and the core of pertinent belief systems. Readers who are familiar with these movements, can skip this part. Second (sections 4 and 5), I follow with a detailed discussion on the shifts in meanings of the political economic categories involved. And, third (section 6), I draw a set of normative conclusions elucidating the above and open new questions for further inquiry.

---

<sup>3</sup> While I am aware of the huge body of literature that stems from the writings of these masters, I want to read their original works—mainly in order to draw the direct parallels between our subject here and the industrial revolution.

## 2. What is the fuss over F/OSS?

### 2.1. A new work ethic

Hackers, a vocal group of special pedigree, animate both the kernel and the fringes of the software world. For decades hackers have been the engine of the software industry and as such the vanguard for large-scale social transformations. As the principle precursor of the network society, hacker culture has guided the computer revolution to its current height and flourished with it. Today, when informationalism has established itself, understanding the key role hacker thought played in said transformations can shed light on the phenomena we are concerned with here. A good departure point for this investigation, therefore, will be a historical account of hacker philosophy such as the one offered in Steven Levy's history of early hackerdom, *Hackers: Heroes of the Computer Revolution*. Levy writes:

Hackers believe that essential lessons can be learned about the systems—about the world—from taking things apart, seeking how they work, and using this knowledge to create new and even more interesting things. They resent any person, physical barrier, or law that tries to keep them from doing this. This is especially true when a hacker wants to fix something that (from his point of view) is broken or needs improvement. Imperfect systems infuriate hackers, whose primal instinct is to debug them (1984:40).

In addition, hackers have always been committed to two creeds: first, information should be available to everybody, and second, authority should be mistrusted and decentralized (ibid: 40-45). Capitalism was in cahoots with these tenets for over 200 years but the recent rise of multi-national corporations and industries, the survival of which depends on controlling information rather than on giving it away, endangers these basic beliefs. We can identify three key stages in the expansion of capitalism: the classical 19<sup>th</sup> century (or earlier) laissez-faire capitalism, the early 20<sup>th</sup> century monopoly capitalism, and the 21<sup>st</sup> century's, distributed, multi-national, or global capitalism. During all three stages state authority has indeed been mistrusted, and information was, to a large degree, free and uncontrolled, disseminated by signals from the market's invisible hand. Recently, though, as informationalism

## On Sourcescapes and Filescales

substantiated itself, commercial entities and corporations understood that information is an asset that must be tightly controlled in order to increase profits and can no longer be shared freely. Unsurprisingly, hacker philosophy which shared key libertarian ideas with capitalism during the latter's long ride from industrialism, now steers informationalism's racing-car in a diametrically opposing direction. But either way, the information super-highway is a toll-road; the central position information plays in our modern informationalism-driven economy dictates that changes in information's generation, storage, or distribution mechanisms will have huge costs, at least to some players. Who, then, will pay the toll?

In his witty and inspiring book *The Hacker Ethic*, Pekka Himanen picks up on Levy's and Castells's ideas and sets out to characterize a new ethic, no less, the hacker ethic. He finds hacker ethic to be a real alternative to the Protestant work ethic (the "attitude toward work that has held us in the thrall for so long" (2001: ix)). In other words, despite capitalism's unprecedented global rise and the prevalence of the Protestant ethic—as defined in Max Weber's classic book *The Protestant Ethic and the Spirit of Capitalism* (2001)—hackers do not underestimate their ability to steer the wagon their way. Their ethic aims to change society from the ground up, and they become exceptionally bellicose at a time when the plummeting costs of computer equipment and the burgeoning Net bring the battles of this ongoing socio-economic tug-of-war to favorable technoscapes. The libertarians they are, hackers dislike paying tolls and they have a powerful weapon at their hand—software—as well as intrepid troops—programmers and users. Apparently, a small group of hackers leads this campaign and the masses follow.

As Levy and Himanen rightly identified, central to the hacker ethic are the socio-economic mechanisms of sharing which are the heart of *Free Software* and *Open Source Software*. Since the set of loosely connected practices and projects that involve communal modes of software production, exchange, and consumption evades clear boundaries or formal definitions, I will denote it using the label *F/OSS*, as a catch-phrase if nothing else. *F/OSS* as a title ties together, with a loose knot, Open

Source projects, Free Software, programs which are part of the Berkeley Software Distribution (BSD), and GNU/Linux. Albeit being at times, non-coherent, disparate, diverse, or even rivaling, all F/OSS projects have a significant common denominator: they all share the key tenets of hacker thought. All these software projects and development methodologies endorse the free distribution of information in non-authoritative manners that defy traditional categories of ownership. These common principles are reflected in the habits, moral duties, or sometimes even legal obligations, to share the knowledge and the sources that are produced while hacking with one's peers.

## **2.2. A short history of F/OSS**

The world of free software (or software developed employing open source methods) has no clear boundaries and includes dozens of thousands of projects that are developed and maintained by tens of thousands of programmers. The results of these projects—software products, programs, and the by-now-famous operating system GNU/Linux—are used, for free, by millions of users<sup>4</sup> around the world. This soup of projects yields software in different flavors but all the projects, as a key principle, ensure the freedoms of users to use a program, to examine and change its source code, to distribute it for free or for a fee, and to distribute the original source code verbatim or with changes. Understanding open source and free software cannot be sundered from understanding these freedoms and their development from the early days of the Free Software Foundation (FSF) through the rivalry with the upstart Open Source Initiative (OSI) and to our time. The activities of these two institutions represent two different but closely related alternative philosophies that underlie said communal digital practices. Michelle Bejian in an ethnographic study of the GNU<sup>5</sup> website describes GNU as follows:

GNU is as much a computer operating system as a philosophy. GNU was started in 1983 by Richard Stallman, at the MIT Artificial Intelligence Lab... Stallman's belief that software

---

<sup>4</sup> SourceForge.Net (2003), the largest open source development community hosts over 30,000 open source development projects and lists projects that have more than nine million downloads.

<sup>5</sup> GNU stands for the recursive acronym “GNU is Not Unix”. This sort of language-game is a typical ‘hack’.

## On Sourcescapes and Filescales

sharing had a viable future drove the publication of what is now known as the GNU Manifesto [announced in 1983]. In 1985 Stallman founded the FSF as a non-profit entity to head up the creation of the GNU operating system. That the development of the GNU system was originally conceived as a non-profit venture is fundamental to understanding the philosophy behind GNU. The mission of the GNU Project was to create a ‘free’ operating system - not a matter of price, but a matter of liberty (1999).

The GNU website defines free software as follows:

Free software is software that comes with permission for anyone to use, copy, and distribute, either verbatim or with modifications, either gratis or for a fee. In particular, this means that source code must be available. “If it’s not source, it’s not software.” (GNU Project Homepage 2003.)

Bejian notes that while historically the GNU Project was always oriented towards the production of an entirely free operating system (efforts that culminated in the commercial version of a fully featured system that uses Linux as its kernel), the FSF went a step further and took on advocacy for free software and open licensing terms as an area for social activism. Turning the copyright system against itself the FSF created the GNU General Public License (GPL) as an alternative to traditional copyrighting. Also known as ‘copylefting’, publishing software under the GPL ensures that the software will always remain free, and avoids potential threats of delayed copyrighting by interested parties that might have occurred had the software been simply released in the public domain. According to its architects’ logic, naming this hack ‘copyleft’ is very simple: “Proprietary software developers use copyright to take away the users’ freedom; we use copyright to guarantee their freedom. That’s why we reverse the name, changing ‘copyright’ into ‘copyleft’” (Sarai Reader 2001: 181). In his essay *Hau to do things with words*<sup>6</sup>, Christopher Kelty rightly finds that Free Software is in its very nature a critique of existing laws, contracts, and business practices, and that it has the potential to explicitly change the “political-economic structure of society” (Kelty 2001:3). The critical nature of Free Software, I suggest, is empowered by its sourcescape which, as we learn here, is NOT

---

<sup>6</sup> Hau is the Maori name of the wind-god. In the context of gift-cultures *hau* can be loosely translated as the ‘spirit of the gift’. The hau demands that the gift be returned to its owner. (Mauss 1990).

## On Sourcescapes and Filescales

in the public domain for anyone to *exploit* but rather is protected by the traditional copyright mechanisms in a way that the legislature didn't foresee. What is reversed is the meaning of copyright protection which through copylefting is used not to conceal and congeal the sourcescape but rather to divulge it and encourage future modifications.

Richard Stallman, whom Levy portrays as the last of the true hackers (Levy 1984:415), describes the motivation and rationale behind the GPL: "if a program has an owner, this very much affects what it is, and what you can do with a copy if you buy one. The difference is not just a matter of money. The system of owners of software encourages software owners to produce something – but not what society really needs." (2001). Stallman knows better; he asks and answers: "What does society need? It needs information that is truly available to its citizens... Society also needs freedom... and, above all, society needs to encourage the spirit of voluntary cooperation in its citizens." (Ibid). Note Stallman's choice of words: it partially explains the connection some people made between his views and socialism although when I interviewed him he strictly denies any such connection<sup>7</sup>. According to Stallman, in the same interview (2002),

The idea that cooperation is an ethical imperative and that society should encourage it is much older than Marx—the world's major religions have been promoting these views for millennia. It makes no sense, therefore, to give Communism credit for them. It is usually enemies of the FSF that call them "communists", perhaps because they find it easier to criticize communism than FSF's actual views. This practice is known as 'red baiting'

Bejian summarizes her study with the conclusion that the GNU Project is characterized by its fundamental assumption that licensing (in the form of copylefting) is a social cause (1999). And this social cause grew into a movement that has seen great success. The invention of Linux in 1991 by Linus Torvalds, at the time a young computer science student at the University of Helsinki, was a

---

<sup>7</sup> In this paper the terms 'socialism' and 'socialist' would refer to social organizations centered around communal production, consumption, and exchange and not to the socialist ideology manifested by political organizations.

## On Sourcescapes and Filescales

significant event on the way to this success. Linux was the last component necessary to make Stallman's GNU operating system fully functional. GNU/Linux together became an exceptionally stable, accessible, and free alternative to popular rivaling operating systems<sup>8</sup>. Because, GNU/Linux from its early versions and on included all the development tools necessary to continue and develop applications that extend the basic operating system functionality<sup>9</sup>, with the completion of Linux the programming world was given, for the first time, the opportunity to collaborate in a large-scale software project that was not driven by research money or prospects of future economic profit. The boom in Internet penetration has accelerated the dispersion of GNU/Linux and today millions of people are using it as their operating system of choice, while tens of thousands of programmers contribute on a daily basis more improvements to the system's various components.

While Torvalds and Stallman, whom are both still key players in this arena<sup>10</sup>, worked on improving GNU/Linux, other hackers, piloted by Eric Raymond, decided to create a new framework for open software and information sharing. Despite Stallman's vehement rejections, the new group believed that Free Software has many more merits to offer than just social ones, and didn't want to be associated with anything that might be considered socialist. Based on the achievements of the FSF, but with an emphasis on software development methodology rather than social and legal advocacy, the Open Source Organization was founded in 1998. Raymond—by all accounts a verbal figure and the principal co-founder of the Open Source Organization—describes the differences in philosophy between his organization and the FSF:

---

<sup>8</sup> Such rivals include Unix (that was in its nature academic but was later supported by the Department Of Defense Advanced Research Agency as part of the Arpanet project, the principal predecessor of the Internet) and the commercial Windows operating system developed by Microsoft

<sup>9</sup> I.e. office applications, games, or graphical tools.

<sup>10</sup> Stallman is still the avid full time engine of the FSF. Torvalds, after working on Linux in parallel to other projects for 12 years recently accepted a permanent position with the Open Source Development Lab. See <http://www.ussg.iu.edu/hypermail/linux/kernel/0306.2/0254.html>.

## On Sourcescapes and Filescales

Licenses are important, but they are not the heart of the matter. The heart of the matter is that a bunch of volunteers, with asynchronous access to openly available source code can build a highly complex piece of software in the absence of any explicit corporate management. **The change at issue is a change in the forms of life and work of software programmers**, along with a change in the process of technical innovation. (Raymond quoted in Kelty 2001:19, boldface mine).

One of Raymond's first moves was to change the name 'Free Software' to 'Open-Source' which as a metaphor sounds much more business friendly. Both the FSF and the Open Source Organization maintain until this day their disparate motivations, and are concerned with being confused with one another. Stallman believes that "it is unethical and antisocial to prohibit other people from cooperating when they wish to (e.g. by distributing non-free software)"; in his eyes, "the Open Source movement was formed to reject that view" (2002). And indeed, Raymond's initial emphasis on the change in the forms of work and life seems to be forgotten when compared with the grand cause of creating better software. According to its founders' claim, the open source community has learned that this rapid evolutionary process produces better software than the traditional closed model, in which only a small group of programmers can see the source and everybody else must blindly use an opaque block of bits. This process is described in the Open Source movement homepage in evolutionary, almost fetishistic terms:

The basic idea behind open source is very simple: when programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, and people fix bugs. And this can happen at a speed that, if one is used to the slow pace of conventional software development, seems astonishing (Open Source Organization 2002).

This is a good example of the way Appadurai's production fetishism (1996:42) changes its face. While methodologies of production are indeed fetishized, it is hard to see "alienation (in Marx's sense) twice intensified, for its social sense is now compounded by a complicated spatial dynamic that is increasingly global". I will return to this point later, suffice it to note now that, if anything, the sourcescapes of F/OSS counterbalance alienating feelings that are generated in the commercial software arena.

## On Sourcescapes and Filescares

At any rate, if we look beyond the different motivations that drive free software and open source, the similarities between them are considerably more apparent than the discrepancies. When compared with traditional methods of software development both open source and free software clearly mark a radical shift in the modes of production, consumption, and exchange. Both free software and open source development and distribution methodologies represent a new mode of production—commons based peer production—as Benkler calls it (2002:2). This new mode is distinct from the property-based and contract-based modes of firms and markets that cherish trade secrets, hierarchy, property rights, and invention-based competition. Fundamental questions arise: “The phenomenon of large and medium scale collaborations among individuals, organized without markets or managerial hierarchies, is emerging everywhere in the information and cultural production system. The question is how we should understand these instances of socially productive behavior: how we should think about their economic value, how we should understand the dynamics that make them possible and make them tick.” (Benkler 2002:6). As we will see, Benkler develops very compelling answers to these questions upon which I build, but his explanations lack detailed analysis of the sourcescapes, filescares, and the shifts in the meanings of the political economic categories. I believe we can answer these big questions without restricting our discussion, as Benkler does, to the mirror of production in which such discussions tend to reflect themselves. Instead we need to launch an enquiry into the nature of production itself: how is production defined and categorized and what are the social consequences of those definitions? These are exactly the questions that Baudrillard asks in his famous book *The Mirror of Production* (1975). I will shortly come back to this point, but first let us look at peer to peer networks.

### 3. Napsterism and P2P file sharing networks

#### 3.1. *A small file for man – a giant leap for mankind.*

The use of personal computers to access peer-to-peer (P2P) file-sharing networks is expanding rapidly. Napster.com popularized the notion of file sharing through a peer-to-peer network, claiming as many as eighty five million users at its peak, when it offered to its members to download a free piece of proprietary software called *MusicShare*. Users could then download files directly from the machines of all the other users that were logged on the system at the same time<sup>11</sup>. Napsterism, coined after Napster, is a general name used in the popular media to describe digital file sharing, subliming a technological practice into an ‘ism’—a social ideology. Plenty has been written about the technological, legal, economic, and moral aspects of Napsterism and the legal measures that have been taken by the music industry to alleviate the losses caused to them by Napster users that traded copyrighted music. Hayes (2001) establishes an elaborate legal account of the Napster trial; Hunter (2002) informs us with a technological-ethical discussion about digital rights management,<sup>12</sup> Long (1995) attacks intellectual property rights on a libertarian basis, and Lessig (1999) reviews in detail the legal and legislative issues pertaining to intellectual property rights in the context of digital distribution. It is my intention here, however, to divulge the filescales of file-sharing networks as a site of communal consumption and novel mode of exchange, a modern implementation of the classic

---

<sup>11</sup> Unlike the conventional client-server experience in which the server streams information unidirectionally to the client, when a Napster user logged-on MusicShare would retrieve from the Napster server a list of online users, allowing users to establish direct links among themselves.

<sup>12</sup> It is interesting to see that when discussing concepts of originality and ownership, digital rights management discourse draws upon concepts initially developed by Benjamin, half a century before the digital revolution, in his seminal essay “The work of art in the age of mechanical reproduction” (1968), and that Appadurai quotes Benjamin to critique “works of reproduction in the age of mechanical art” (1996:43)

## On Sourcescapes and Filescales

Marxist idea that all members of a society shall receive from it attention to their basic needs<sup>13</sup>. (Marx 1988).

When, in summer 2002, the music industry used the Supreme Court to make Napster close its shop<sup>14</sup> users which were by then accustomed to the ease of file sharing offered by P2P networks rapidly found more legally-immune alternatives to fulfill their file sharing needs and turned to a new generation of file-sharing programs. The main alternatives to Napster's central server architecture are the Gnutella and Kazaa open networks; open meaning in this case that various individuals or companies are free to build software for these networks. The advantage of an open protocol is that it allows any individual or corporate entity to introduce new content and applications into the network. As a result most of these new programs have more features than Napster's MusicShare and can share any type of file not just audio files as Napster used to. In the *Gnutella Manifesto*, this possibility is preached in economic terms. It is described as allowing the creation of "a true free market environment." (LimeWire 2002). Moreover, networks and applications like Gnutella, Kazaa, BearShare, Limewire, and Morpheus, which now claim having more than 250 million participants who have downloaded the software (combined) (Kazaa 2003, Morpheus 2003), and which experience shows that at least four million are online at any given time. The systems are harder to regulate since unlike Napster they operate without a central directory that manages the file-sharing operations. Simply put, in such a distributed operational scenario the software companies bear no liability for copyright infringement just like VCR manufacturers do not have liability for potential movie

---

<sup>13</sup> Admittedly, mostly social or play needs in this case.

<sup>14</sup> Napster was hit by a lawsuit from the Recording Industry Association of America (RIAA). The suit led to a court decree requiring Napster to cease operations or ensure that no copyright-protected works would be traded on its service. Napster could not satisfy the courts demands and filed for bankruptcy in June 2002. See IDG News Service 2002.

## On Sourcescapes and Filescales

replication<sup>15</sup>, and this can explain why the music industry has turned to a policy of exploiting the ominous statues defined by the Digital Millennium Copyright Act (DMCA) and suing individual users (usually college students who swap thousands of files, but occasionally kids who live in subsidized housing) as a way to try and intimidate the file sharing community.

All these new software products offer a range of means for facilitating a search through the respective filescale. Users can select to search for files by type, keyword, title, or artist. Once a search commences, the software displays a list of peers who are currently sharing files that match the search criteria and a simple selection initiates a direct transfer from the source computer to the requesting user's computer. The requesting user may start sharing the file with others as soon as the download is complete. Multiple transfers to other users ("uploads"), or from other users ("downloads"), may occur simultaneously to and from a single user's computer.

The commercial consequences of these filescales are, of course, horrific for the music industry which according to *Wired* magazine deserves a moment of silence since it is about to die as we know it. (Mann 2002:90). A short glimpse at the list of available files on any of the file sharing networks (which includes, among original content, pirated versions of Hollywood's box-office hits, sometimes weeks before their official release) indicates that the same doom awaits the film industry too. As we proceed we will return to more examples that illustrate the mixture between socialist terms of 'sharing' and 'equality' and capitalistic tropes regarding "construction of the 'free market'" and analyze how this mixture affects the different scales.

---

<sup>15</sup> See a detailed discussion in Metro-Goldwyn-Mayer Studios, et al. v. Grokster, Ltd., et al. CV 01-08541-SVW C.D. Ca., January 2003, and also, A & M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1013 n.2 9<sup>th</sup> Cir. 2001 and Sony Corp. of America v. Universal City Studios, Inc., 464 U.S. 417, 104 S. Ct. 774, 1984

### **3.2. Filescales of P2P networks**

The idea behind Gnutella is that open protocol environments can innovate, build, and maintain themselves better than closed protocol networks such as Napster. Gnutella operates without a centralized server, and thus, “With Gnutella no entity will have an artificial choke-hold over the network or over the information flowing through it. This free market environment promotes competition among entities choosing to respond to the same queries.” (LimeWire 2002). In other words, Gnutella is a technological platform, an economic system, and most importantly a social construction, that allows agents to freely create, share, and consume knowledge (in the form of digital files). Unsurprisingly, these are exactly the foundations of the F/OSS enterprises. Over a short period of time P2P networks have evolved from the early, first generation, music sharing networks like Napster, to become huge marketplaces for multiple types of digital assets. Logging in to any such network will rapidly reveal the potential and ease of acquiring at no cost ANY genre of music, images, software, movies and other content such as pornography. The expansion of these filescales is, in my view, very strong evidence suggesting that the users are looking for alternatives to capitalistic knowledge/power relations of dispersion and consumption. Users disavow the oppressive forces exerted by global mass media juggernauts through the mediascapes and outsmart enterprises that now fully control the normal dispersal of a wide variety of content (news, music, erotica, documentary, etc.). While one can argue that using P2P technology to gain access to content (commodities) for a reduced price (the cost of an internet connection, not more) falls well within capitalism and its agents’ propensity to reduce the cost of goods they need to acquire, we cannot overlook the fact that here a sincere disjuncture from classic capitalism is at play: the Net as a multi-focal system in general, and P2P networks particularly, are structures that offer the means not merely to reduce the costs of commodities (potentially to zero) but also to bypass the centrality of resource, knowledge, and content aggregation and dispersal that are typical of the advanced stages of capitalism. While the success of P2P networks is without a doubt partly due to the users’ desire to get things for free, there

## On Sourcescapes and Filescales

is a strong component of rebellion in this success inasmuch as P2P networks allow the users to escape standard monopolistic content distribution mechanisms that treat content as “products”. Consider, for example, the way that Clear Channel, the largest operator of radio stations and concert promotions in the US, treats its business; Lowery Mays Clear Channel’s CEO is quoted as saying to Fortune magazine: “We’re not in the business of providing news and information. We’re not in the business of providing well-researched music. We’re simply in the business of selling our customers products” (Tyler 2003:13). This type of attitude assures that both users and artists are infuriated, and in fact indirectly promotes alternatives such as P2P networks.

From a different perspective, consider the concept of “free-loaders” the catch-phrase used to describe users who do not share any files of their own but want to download files from other users. Ostensibly, sharing a file with other users reduces the network bandwidth and computing resources which are available to a user for his own download operations and, as a result, raises his ‘cost’ in terms of download time. Why, then, are not all users becoming free-loaders? A potential answer, I believe, can be found in the mechanism of inclusion that I described earlier. Users want to feel that they are part of a large network, and they gain such a feeling by contributing files of their own (this is usually quite easy and the cost of doing so is quite negligible). This principle can also explain why all the leading P2P applications provide users with real-time statistics about the amount of peers who are online at any given time and in most cases visualize the size of the filescape available (in mega-bytes and/or the amounts of files, or other metrics). This brings to mind Appadurai’s assertion about the way that the imagination has become “an organized field of social practices...a form of negotiation between sites of agency (individuals) and globally defined fields of possibility” (1996:31). The filescales of P2P networks are indeed global fields of possibility that are easy to imagine given the built-in features in the file sharing software. These fields encourage the users to imagine the network (by highlighting monitoring statistics) and as such they demonstrate Appadurai’s claim that “The imagination is now central to all forms of agency, is itself a social fact, and is the key component of

## On Sourcescapes and Filescales

the new global order,” (ibid) but they differ from Appadurai’s analyses in at least two important ways. First, the users (peers) are not the only sites of agency since they share their agency with the Net and the automatic search mechanisms. In fact many users leave their computers on all the time to share files even when they are not watching. The level of agency is also the main difference between said sourcescapes and filescales. While in F/OSS the framework is production-oriented and assumes a high degree of participant agency, in P2P networks the framework is consumption-oriented, and assumes very little agency, if any. Sourcescapes, therefore, are islands of productive potential in the general filescales scene. The second significant point of difference between file sharing networks and Appadurai’s notion of the imagination as a social practice has to do with pornographic content (images, documents, audio, and movies), which is an ever-growing portion of the common filescales (up to 35% by some estimates) and a major concern, at least where children are involved (US House of Representatives Special Investigations Committee 2002). Without fully judging pornography’s nature<sup>16</sup>, I suggest that sharing this type of content offers exactly what Appadurai believes has completely vanished: the imagination as a mere fantasy in light of new forms of desire and subjectivity. At the same time, even these types of virtual fantasy islands, if we can call them that, are under constant threat of being annexed to the global production lines of imagination. A recent example being Napster itself which even while in bankruptcy kept stirring interest. Before it was acquired by Roxio which will try to make it a legitimate music sharing service, Private Media Group—a sex mogul from Spain—bid \$2.4 million to purchase Napster and its original user database in order to turn it into a pornographic peer-to-peer network. Interestingly enough, at the same time, Napster itself maintains a rebellious spirit. In the animation that is projected on its website, Napster’s mascot (a cat) appears as an incarcerated inmate getting shot when trying to escape a prison wall

---

<sup>16</sup> The issue of pornography over P2P networks received significant attention when Congress enacted laws to prevent it and subject it to criminal law. See < <http://zdnet.com.com/2100-1105-992371.html> >. A more detailed discussion on this charged issue deserves full attention but I dare not open such a Pandora box in the limited space of this paper.

## On Sourcescapes and Filescales

using an improvised linen rope without letting go of its headset (Napster 2003). This, I believe, is Napster's interpretation of "give me liberty or give me death"—the concept put forward by Patrick Henry (1775).

Before we proceed, let me make two final comments about the nature of P2P filescales. First, and perhaps this is the most striking element of the P2P system, note the fact that the majority of the content which is shared on the network is not *owned* by the people who share it. As we saw earlier, hacker culture defies standard notions of ownership, and for a good reason. Just as in the case of software, for other content too, the concept of non-tangible property (intellectual or otherwise) is very elusive vis-à-vis technologies that enable replication of it without detriment to the original's quality (in other words its nature is non-rivalry). Furthermore, without a good definition of property the category of ownership becomes empty, to borrow from Kant. As I will explain below in the discussion on money and exchange, this has significant implications to the whole system. Secondly, and this is also a defining feature of these filescales—we are dealing with a system without a center. This is true in two senses: (a) there is no central place from which the network is managed (this much is true for the Net in general) and (b) there is no center or periphery in the evaluation of content quality. While popular content will be abundant and will be available from more than one peer at a given time, even esoteric content can be found, shared, and distributed with ease. Thus, multi-language content is highly available or, in the case of music, the works of emerging artists that would otherwise have no mechanism of distributing their albums (since the large labels filter-out the majority of the works they consider) are proliferating like nowhere else. In such a perspective-dependant framework, therefore, each of the users becomes the center of their own filescales without being subject to any sort of filtering, mediation, or value-judgment mechanisms that we otherwise find in standard Net environments like the Web.<sup>17</sup>

---

<sup>17</sup> Contrary to a lay notion that the Web in general is a system in which anyone can find anything, in practice the huge volume of data that is available precludes any meaningful usage without the aid of search engines, and

#### 4. Old Categories – New Meanings

What is going on here? What type of economy is this? Putatively such socio-economic modes of production, consumption, and exchange that employ only rudimentary managerial structures do not have strong mechanisms that enforce authority, have no judicial and penal systems, and above all do not offer money to the producers, are likely to have severe problems when operating in large scales, yet these systems keep growing. How can such a system function at all? How can it sustain its growth? How could this model scale to the point of becoming a threat to traditional modes of software and content production and dispersion? Can Linux, which is now endorsed by such industry juggernauts as IBM and HP, truly become the operating system of choice of businesses and governments world-wide? Can Kazaa and Morpheus actually win the fight against the music industry? These questions can be answered only while answering more fundamental questions. A quarter of a century ago, Baudrillard raised three key doubts in his famous book *The Mirror of Production* where he lays out his brilliant analysis of the political economy of the sign. He asks:

- Are we always within the capitalist mode of production? If the answer is yes, we readily accept classical Marxist analysis.
- Are we within a later mode, so different in its structure, in its contradictions and in its mode of revolution, that one must distinguish it radically from capitalism (while maintaining that it is always a question of a mode of production which is determinant as such)?
- Are we, quite simply, within a mode of production at all, and have we ever been in one? Concerning the present phase of political economy, Marxist thought gives us only analyses centered on monopolistic capitalism. In effect, this is the only point which imposes the necessity to theorize something that Marx merely foresaw. (1975:124).

---

thus subjects the users to other people's value judgments, whatever these might be. Google tries to minimize this intrusive effect by ranking pages based on their centeredness (in terms of their incoming/outgoing hyperlink ratios); obviously, such a strategy yields good results on average but marginalizes even further alternative content.

To answer these challenging questions in our context it is necessary, so it seems, to substantiate an understanding of the very basic meaning of the categories of the political economy of F/OSS and P2P networks.

#### **4.1. *Production and labour power – on Karasses and Granfallons***

In “Welcome to Cyberia: Notes on the Anthropology of Cyberculture,” Escobar investigates the relationship between information and capital (1994:211). He wonders whether it is appropriate to postulate the existence of a ‘mode of information’ akin to a mode of production and explores the connections between information, markets, and cultural orders. Identifying a process, where others see fragments, Escobar stretches concepts of historical materialism into novel realms and notes that the shift to new information technologies marked the appearance of more flexible, decentralized labor processes traditionally stratified by gender, ethnicity, class, and geographic factors. The emergence of distributed systems such as P2P networks and F/OSS communities is in essence a telltale example of such extremely decentralized processes. But how is labour defined in this context, and what happens to the Marxian labour-power, the all-encompassing measure of things?

If Marx or Adam Smith were to observe the overall economic forces that govern the expanding software development sphere, namely, software production, consumption, and exchange, both would most probably expect it to be rapidly commodified. Smith would focus his explanations on exchange, while Marx would focus his account on production and its means<sup>18</sup>.

Smithian logic would expect that with the conquer and annexing of ever larger parts of the industrial economy to the rule of informationalism, the market for programming-power would constantly expand and that the price paid for programming-power, like that of all other commodities, would become a function of this growing market. Furthermore, programming-power itself should, by

---

<sup>18</sup> I use here Marxist and Smithian concepts not as part of an ideology, but as useful methodologies. Faced with the rapid transformations in production and exchange relationships as we are, I believe that both Marx and Smith, at the heavy price of charged ideological baggage, offer very powerful tools for inquiry.

## On Sourcescapes and Filescales

and large, be commodified. The invisible hand, Smith would argue, when considering the levels of dexterity, education, supply, demand, and other factors that affect wages should determine the exchange values of software and software production-power in a cyclical manner typical of other commodities (1904:chapter 5). According to this logic, at a time of increase in demand, software production prices should rise and at a time of decline in such demand the prices should fall, but all the while, transactions within a well defined market should regulate the wages and salaries of software engineers. The latter will be lured to maximize their profit by employing market tactics that would allow them to sell their years-worth of skills to the highest bidder, thus inadvertently collaborating with capital. Should all this happen, Smith would conclude, a global software market will emerge, wherein software production, like any other production, is standardized and programming-power is fully commodified and controlled by the market.

Capital, Marx would decry, will control software and programming labour as it controls any wage labour because it exploits it (1978:204). The inevitable long-term outcome of a system in which the workers do not control the means of production, Marxian logic dictates, is that instead of allowing programmers to maintain high income levels, over time software production will be shifted to regions of low-cost labour or alternatively, low-cost labour will be imported to areas in its demand. Consequently, the price paid for software-labour power will diminish to the minimum necessary to socially maintain the class of programmers. Recent developments in the international software market, such as the creation of local 'silicon valleys' in South-East Asia (like Bangalore in India, which now directly competes with the real silicon valley which fostered it), or the US government's H1-B specialty worker visa program (which allows corporations to hire skilled but low-waged programmers), seem to directly confirm such Marxian angst.

Seemingly, this process is indeed taking place and leading to the single, capitalistic, steady-state solution of these loosely defined socio-economical equations, or so you would think. Apparently, F/OSS is a technology-mediated alternative. In contrast to production motivated by market signals or

## On Sourcescapes and Filescales

programmers' dependence on their employers and capital, F/OSS involves many dozens of thousands of programmers that contribute to thousands of F/OSS projects in which the software is not owned by anyone. "The result has been the emergence of a vibrant, innovative and productive collaboration, whose participants are not organized in firms and do not choose their projects in response to price signals." (Benkler 2002:1). Thus, the lack of ownership becomes a connecting thread: a system in which no-one owns the software is also a system in which no-one (i.e. the market or the firm) owns the labourer.

This lack of control and ownership raises the question of motives. Within industrial capitalism, why does the worker sell his labour-power? "In order to live" Marx tells us in *Wage Labour and Capital* (1978:204). In contrast, why does the hacker work? Linus Torvalds, the architect and inventor of Linux tells us: "The reason that Linux hackers do something is that they find it to be very interesting, and they like to share this interesting thing with others" (Torvalds, 2001: xvii). Working for sheer interest rather than for survival is an act that takes place in the sphere Torvalds calls 'entertainment'. Doing so is, of course, only possible after satisfying more fundamental needs that belong in the spheres which Torvalds names 'survival' and 'social activity', the potential fulfillment of which he takes for granted. We will return to these points later when we analyze the categories of money and fun. For now, though, we see that the whole category of labour is diffused. First, as Himmanen rightly notices, hackers do not feel that leisure time is automatically any more meaningful than work time. "The desirability of both depends on how they are realized. From the point of view of a meaningful life, the entire work/leisure duality must be abandoned. As long as we are living our work or our leisure, we are not even truly living. Meaning cannot be found in work or leisure but has to arise out of the nature of the activity itself. Out of passion. Social value. Creativity." (2001:151). Moreover, since labour is not motivated by the prospect of economic profit and is not rewarded by money it is much harder to distinguish labour from leisure—in principle and in practice.

## On Sourcescapes and Filescaapes

Additionally, since the boundaries of what constitutes labour become permeable, the whole definition of the labourer is shifted. Baudrillard writes of political economy's grave mistakes:

The system of political economy does not produce only the individual as labor power that is sold and exchanged: it produces the very conception of labor power as the fundamental human potential. More deeply than in the fiction of the individual freely selling his labor power in the market, the system is rooted in the identification of the individual with his labor power and with his act of 'transforming nature according to human ends.' (1975:31).

So, if we accept Baudrillard, in a modern political economy how can we expect to account for individuals that disallow the definition of labour as the fundamental human potential and choose to ignore categories of labour and leisure? We caricature them as poor humans. And indeed, early hackers suffered such derision and were considered by outsiders as "maladjusted youths who turn to hacking because they lack social skills and feel marginalized." (Moody 2001:3). A faculty for labour has become over the heydays of capitalism not only an inclusion criterion to the world economy, but also a prerequisite to entering humanity itself. In this capacity, since labour depletes the labourer of his other faculties (i.e. cognitive choices of creativity, passion, and social values) Marx's concepts of labour, labour power, and production should be submitted to a radical critique as ideological concepts (Baudrillard 1975:43). To be sure, Baudrillard calls for the shattering of the 'mirror of production' (ibid: 47) and accuses Marx of preserving the categories of labour and production as the focal point of his critique of political economy. Instead, Baudrillard argues, exchange is the true fulcrum of the whole system. Vis-à-vis the F/OSS environment this indictment seems apt more than ever since labour seems an empty and diffused category compared to exchange. By undermining the ideology of labour F/OSS smashes the mirror of production.

What about P2P networks in this context? In his classic novel *Cat's Cradle*, Kurt Vonnegut (1963) explains how the world is divided into two types of social organizations: the *karass* which is "a team that do[es] God's Will without ever discovering what they are doing." and the *granfalloon* which is a "false karass," a bureaucratic structure that looks like a team but is "meaningless in terms

## On Sourcescapes and Filescaapes

of the ways God gets things done." A karass is a spontaneously forming group, joined by unpredictable links, that actually gets things done—think of Kazza, Morpheus, Napster. A granfaloon is a false entity that thinks it knows how God gets things done but in reality precludes things from being done—think of any national government, or in our context the Recording Industry Association of America (RIAA). Vonnegut constructs the cat's cradle metaphor as part of his criticism against organized religions, but in our case I think this metaphor (minus God) is a very potent simile to describe P2P networks. Just like in the kids' physical string game, there is nothing in a virtual cat's cradle beyond the accidental links (virtual peer-2-peer Internet connections). Transient P2P networks exist as long as they need to in order to get the job done, not a second longer. In other words, the network is centered not around production processes but on exchange processes. This change of focus yields a reversal in thought processes. Think about the RIAA again. Think about its name: it's focused on the production, the recording process of music, although today the recording is only a small part of a larger sphere of music (that includes, recording, editing, replication, distribution, and above all branding, marketing, and promotions, all aimed at increased sales). P2P networks offer the alternative. At the extreme: (1) Plug in your electronic keyboard and microphone (2) record a piece of music on your home computer and (3) share it with millions of users. If they like it they'll distribute it further. The creators of Kazaa think that this production process is so different from standard creation that they invented a name for it—Kreation:

Why Kreate? Using P2P technology is a perfect way for musicians, producers, poets, photographers and artists to make their work available to others, while enhancing the experience for all users ... You can also collect and share works that are in the public domain, are licensed for public distribution (e.g. Creative Commons licensed works) or open source software and become a resource for others. (Kazaa 2003).

Kazaa is an example of a karass in motion: an entity that promotes creation and is motivated by exchange and not by production processes, and gets the job done. And notice that at no point did we mention money: we observe here a labour/distribution system that works without money. How can

this work? Let us proceed to analyze the power relations that exist between F/OSS, P2P, capital, and money.

#### **4.2. Capital and Money – Are Software and Content like Sex?**

When Stallman decided to name his organization the *Free Software Foundation*, he thought about free speech, not about free beer. Linus Torvalds, on the contrary, is quoted as saying that “Software is like sex—it’s better when it’s free.” (Torvalds and Diamond 2001). Beyond these catch-phrases and language-games, though, lies a profound philosophy: F/OSS communities are not focused on producing software that costs nothing—they are focused on software that can be used and modified by anyone (Pavlicek 2000:160) As we saw earlier this focus engenders two types of freedoms—economic and non-economic—simultaneously. Free software’s focus on freedom also embodies ambivalent links to money and capital.

Money as we have come to understand it means four things: (1) a means of exchange, (2) a mode of payment, (3) a standard of value, and (4) a means for the storage of wealth. Looking at money as a mode of payment, money is connected to software through three distinct relationships: (a) money as the driver of work, and (b) money as a reward for such work and (c) as means of exchange for its products. These relationships are closely tied since the motivation for work is often developed due to the anticipation of money-form reward. Additionally, capital is usually connected to software as an organizational factor in the institutional creation of profit. To summarize the entire venture capital industry in one line: capital investment (in the money form) nurtures software ventures in their early stages in the hope that the development process will yield surplus value in the form of highly-sellable software-products and technologies that yield high dividends and/or that the companies could themselves be sold (privately or to the public), when they mature, at a large profit. F/OSS challenges all these relationships, as open source systems foster direct conversions of products and capital in non-money form. To understand how radical this challenge is we can go back to Marx who writes

## On Sourcescapes and Filescales

about the basic transformation of money into capital in an industrial context. Marx writes in *Das Capital*:

As a matter of history, capital, as opposed to landed property, invariably takes the form at first of money; it appears as moneyed wealth, as the capital of the merchant and of the usurer. But we have no need to refer to the origin of capital in order to discover that the first form of appearance of capital is money. We can see it daily under our very eyes. All new capital, to commence with, comes on the stage, that is, on the market, whether of commodities, labour, or money, even in our days, in the shape of money by a definite process has to be transformed into capital. (Marx 1978b:329).

Does this translation from money to capital take place at all in software in general and in F/OSS particularly? Consider money as an incentive for work. Lerner and Tirole, in their paper on the *Simple Economics of Open Source* (2000), delve into a comparison between open source and closed source programming incentives. They compare short and long term rewards, and examine the old contention that the prospect of profit encourages investment. While they find that the contention holds, they show that the profit for open source programmers will not come in the form of money, but rather in the form of social reward through ‘signaling incentives’.

Signaling incentives therefore may be stronger in the open source mode for three reasons: i) Better performance measurement: ... in an open source project, the outsiders are able to see not only what the contribution of each individual was and whether that component “worked,” but also whether the task was hard, if the problem was addressed in a clever way, whether the code can be useful for other programming tasks in the future, and so forth. ii) Full initiative: The open source programmer is her own boss and takes full responsibility for the success of a subproject... iii) Greater fluidity: It may be argued that the labor market is more fluid in an open source environment. Programmers are likely to have less idiosyncratic or firm-specific, human capital that limits shifting one’s efforts to a new program or work environment. (Lerner and Tirole 2000:17).

Lerner’s and Tirol’s analysis is inline with Bourdieu’s definitions of *social capital* as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition.” (1986:248). An individual’s social capital is determined by the size of his/her relationship network, the sum of its cumulative resources (both cultural and economic), and the rapidity in which s/he can set them in

motion. Signaling incentives replace money in this context. F/OSS demonstrates Bourdieu's assertion that cultural and social capital can never be reduced to pure-economic form even though they are derived from economic capital. Open source explains how cultural and social capital in the forms of signaling incentives (visibility, responsibility, fluidity) remain effective insofar as they conceal their relationship with economic capital in its money form.

In his perceptive discussion of the advantages of the open source model over traditional software development systems, Benkler finds a similar relationship between creativity, money, and capital. He shows how human creativity supersedes economic capital in an environment in which the reduction in the prices of computing resources lends itself to a political-economic shift in an arrangement that no longer takes the cost of physical capital as the central organizing principle of production.

...where physical capital both for fixation and communication is low and widely distributed, and where the primary non-human input—existing information—is itself a public good, the primary remaining scarce resource is human creativity. And it is under these conditions that the relative advantages of peer production in organizing that input permit that mode of organization to emerge to much greater glory than possible before. (Benkler 2002:9).

It follows that F/OSS technology allows human creativity to supersede money as the dominant organizational factor. Linus Torvalds would agree. He thinks that “Money is certainly useful, but most people would agree that money per se is not what ultimately motivates people. Money is motivational for what it brings—it's the ultimate bartering tool for the things we really care about...One should not dismiss the social impact of having money, whether you buy something or not. Money remains a powerful thing, but still it is just a proxy for other more fundamental motivating factors.” (Torvalds 2001: xv-xvi) And these other fundamental motivating factors as we realized in our discussion on labour, and as I will later explicate in further detail, are passion, entertainment, and fun, categories of inner subjective life, which are examples of what Georg Simmel, in his renowned book on the *Philosophy of Money*, simply calls Love:

## On Sourcescapes and Filescaapes

Love which according to Plato is an intermediate stage between possessing and not-possessing is in the inner subjective life what means are in the objective external world. For man, who is always striving, never satisfied, always becoming, love is the true human condition. Means, on the other hand, and their enhanced form, the tool, symbolize the human genus. (1978: 211).

For Simmel—unsurprisingly, given the name of his book—money is, of course, the ultimate means:

Money is the purest reification of means, a concrete instrument which is absolutely identical with its abstract concept; it is a pure instrument. The tremendous importance of money for understanding the basic motives of life lies in the fact that money embodies and sublimates the practical relation of man to the objects of his will, his power and his impotence (ibid)

In contrast, for Torvalds money is far from having tremendous importance, it rarely sublimates anything, and is almost a redundant means of exchange; if fun can be attained without money, so be it. Money is reduced to be a boundary object, a means of exchange only, and not a standard of value. For Stallman, money is outright despicable—he doesn't even want it as a means of exchange; when in the early 1990s he won the Macarthur Fellowship “genius grant” he invested the money in mutual funds so that he can work on free software for the rest of his life (Levy 1984:436). As he told Moody: “I don't want to spend a lot of money. If you spend a lot of money then you're the slave of having to make money. The money then jerks you around, controls your life... There is only one way I could have made that money, and that is by doing what I'd be ashamed of—writing non-free software.” (Moody 2001:28-29). Although Stallman is by all means an extreme example of this sort of asceticism his attitude can explain how Max Weber's concepts of wealth accumulation as a ‘sign of success in calling’ are completely diffused in this context. To conclude, a member of a F/OSS community does not need material wealth in order to fortify his social status. Since the source is present and available for anyone to examine, performance measurements do not need the mediation of money as a score-keeping instrument, and are performed directly.

Now let's consider money as a reward or as a means of exchange. Here the relationships are much clearer: in both F/OSS and P2P file-sharing networks money simply doesn't exist as a category and is displaced by simple exchange, ownership relations, or social rewards. In a dialogue with Eric

## On Sourcescapes and Filescaapes

Raymond's text Lars Risan (2000), argues that, as the title of his article suggests, *Hackers Produce More Than Software: They Produce Hackers*. What Risan means is that open source projects are created by social processes that produce not only software but also the identities of the programmers involved. This assertion, I think, could also extend to P2P networks. Following Raymond, Risan identifies a system of ownership that is "not explicit and juridical, but rather a part of the informal culture of hacking." This ownership system has two major effects. First, we find prodigies like Linux: a complex but almost bug-free operating system that was developed within a social-structure that has no clear hierarchy, money compensation, or penal mechanisms. "The second effect of the ownership and credit system of Open Source software...is that these rules produce pride, personal identity, and mutual acknowledgment of effort and skills. Hackers are credited for their work and become someone in the eyes of their significant others. Hackers do not hack for 'free', they do it for some kind of social reward." (ibid). What, then, is the mechanism that best describes this social reward system?

Raymond describes the specific ways in which hackers compete for social status as a gift culture. "In gift cultures, social status is determined not by what you control but by what you give away. Thus the Kwakiutl chieftain's potlatch party. Thus the multi-millionaire's elaborate and usually public acts of philanthropy. And thus the hacker's long hours of effort to produce high-quality open-source code." (1998). According to Kely's reading, Raymond's gift culture explanation is part of his trichotomy of the world which is constituted in order to salvage the properly functioning free market from experiencing irrational behavior. For Raymond only exchange constitutes an economy, while gift-giving remains culture, and communal practices are not considered being either culture or economy (Kely 2000: 263). After re-reading Marcel Mauss's *The Gift* (1990), Kely finds that "by considering money and financial institutions as specific, material members of the empirical world that governs memory and expectation, we can understand the seemingly irrational fact that people do something for nothing without reducing it to an economic calculation of monetary gain." (2001a:4).

## On Sourcescapes and Filesclapes

It is the seeming irrationality of people doing something for nothing that Raymond tries to explain as part of his move to ensure the wide acceptance of the open source methodology. This irrationality needs explanations since it stands in stark contrast to the dominating rational spirit of capitalism, as Max Weber understood it, wherein rationality is the main driver for the division of labor and for labour itself. What, Weber asks, drives this rational organization, the routinized, calculated administration of a disciplined labor force and the regular investment of capital into enterprise? He finds an answer in the *calling*, the concept that the highest form of moral obligation of an individual is to fulfill his duty in worldly affairs: "Labor must...be performed as if it were an absolute end in itself, a calling. But such an attitude is by no means a product of nature. It cannot be evoked by low wages or high ones alone, but can be the product of a long and arduous process of education." (2001:62). The calling, consequently, gives ethical justification for rational economic behavior and the specialized division of labor: "For though development of economic rationalism is partly dependent on technique and law, it is at the same time determined by the ability and the disposition of men to adopt certain types of practical rational conduct." (2001:26). Raymond, whose project is to convince capitalism to endorse open-source (a mammoth task that even while worldly at times surely seems as if it might indeed require divine intervention), must resort to gift-culture explanations in order to reconcile the putative open source irrationality paradox without turning to religion. David Zeitlin (2003) agrees with Raymond but proposes a somewhat different solution to the paradox by accepting gift cultures but suggesting, at the same time, to focus not on economic ties of exchange but rather on the almost familial ties that exist in a F/OSS community: "It's a type of gift relationship but one with a different type of symbolic capital accruing to the givers depending on the variety of kinship systems." (2003:7).

Furthermore, according to Federico Iannacci's economics of open source, Raymond's contentions are vulnerable to a more general problem: gift culture explanations simply contradict the earlier assertions regarding signaling incentives. If we accept the signaling incentives paradigm then,

## On Sourcescapes and Filescales

metaphorically speaking, “hackers, programmers and contributors are far from being benevolent benefactors operating in a gift economy whose only purpose is to share their own knowledge; they are individualistic agents whose actions produce public goods that are a side-effect of their private behavior.” (Iannacci 2003:6). This seeming contradiction could be reconciled, however, if we choose to see money, gifts, and reputations as interchangeable. Kelty rightfully finds that at least as a standard of value the currencies of money and reputation are indeed compatible: “the standard of value (money, or the citation) only serves to stabilize the network of obligations thus created: in the case of money economies, a single cardinal value, in the case of citations, a widely recognized, though oft disputed reputation...Money, it should be very clear, simply isn't natural.” (2001b).

While for Raymond gifts do go hand in glove with modern methods of exchange, Simmel, in stark dissimilarity, finds gifts to be primitive, at best. He writes: “Robbery, and perhaps the gift, appear to be the most primitive stages of change in ownership.” (1978:290). But at the same time Simmel acknowledges that when the stage of exchange becomes “a mere consequence of the equal power of both parties, then this would be evidence of the greatest progress that mankind could have made.” (ibid). Simmel, of course, thinks that of all things the use of money will demonstrate such an equal exchange to the highest degree, but as we have seen, even without resorting to gift-culture explanations open source enables an exchange among equals without turning to money at all.

This, of course, raises a paparazzi-style question: if money isn't the means of exchange how do F/OSS participants—at least the ones that do not win genius grants—pay their bills? Or, in more rigorous words, how can a money-absent economy interface with a money-centric economy? The answers to these questions are, to a large extent, what differentiates between Free Software and Open Source. Free software aficionados seem less concerned with the concept of money at all while open source devotees have answers ready. One of the most vocal evangelists of open source is Bob Young, the founder of Red Hat Software, the company behind the most common Linux distribution in the market, who writes: “If the collapse of the Berlin Wall had taught us anything, it was that socialism

## On Sourcescapes and Filescales

alone was no a sustainable economic model. Hopeful slogans aside, human activities didn't replicate themselves without a good economic model driving the effort." (1999:113). Young and others like him (see Pavelick 2000:115) have developed a successful economic model that is based on providing services rather than charging money for the core software. Like lawyers whose business model is based on charging good money for the services they provide (e.g. writing contracts, litigation, etc.) without having to sell any good or property, so, Young argues, can open source developers rely on selling their services too (e.g. customizations of F/OSS to new platforms). In fact lawyers are a good example because many of the things that they deal with, just like in open source environment, are within the public's reach (e.g. court rulings, statutes, etc.) Doesn't this money-making model, then, contradict my earlier assertions about F/OSS being an alternative to capitalism and a critique of it? I think it does not. We cannot ignore the fact that in the process of making money with open source, the meaning of money, as I have shown, was depleted and changed. This very change is a critique in its own right.

What about P2P file-sharing networks? Here Torvalds's assertion about software can be extended to content: just like sex, it's better when it's free. In this case, however, free should be understood as in free beer, not as in free speech. While capital persists in P2P networks, money doesn't exist. Capital assumes a digital form, a file form. Wealth of P2P network peers is accumulated not in money but in digital files: a rich user has many files while a poor user doesn't. The standard of value is set by two things: the availability of the assets through other systems (i.e. virtual or physical stores) and the quality of the files available for download (i.e. their integrity, sampling bit-rate, etc.). In the first instance money is non-existent but its shadow is—money derived value is induced through the permeable boundary of the system; a music file will be more sought after if it is ranked high on the hit-list-charts or if it just came out in a new album in stores. In the second instance, money is not relevant: the integrity of files is determined by their technical quality alone. Although new systems coming to the market in recent months (e.g. Altnet or Apple's iTunes Music Store) do hope to re-

instantiate money as mode of payment (mainly for the trading of copyrighted content), in the leading P2P systems money is in no way a means of payment or of exchange.

To conclude, I have shown that for F/OSS and P2P communities, money is far from being a result of circulation, an organizational factor, a pure means of exchange, a reward for work, or a motivational factor as a mode of payment. The whole concept of money, as much as it exists, represents merely a point of contact with the outside world, if that. We see that in theory and practice in said systems within the spheres of production, consumption, and exchange, capital rarely assumes the money-form. These systems obliterate money by offer means of trading social and cultural capital without ever going through the money-form and. Money, therefore, becomes obsolete.

#### **4.3. A market beyond the Market**

As we have seen, unlike the FSF that promotes the establishment of free software as a social practice, the open source organization views as crucial the construction of open source as a market-accepted methodology. In his dissertation *Scale and Convention: Programmed Languages in a Regulated America* Kelty summarizes:

Opensource.org has successfully shifted the discussion away from “freedom” and politics, to that of business models and marketing, but this is ideological packaging for the weakening of vigilance over the attention to licenses that the FSF once performed ... This maneuver, by opensource.org, is therefore a disingenuous disavowal of politics that hides a strengthening of both property and contract rights of software corporations.” (Kelty 2000:32).

The market—one of the most cherished aspects of capitalism—creates a disjunction between open source as a methodology and free software as a social philosophy, but at a first glance, both organizations maintain the market as a locus for making their claims. Himanen asks: “Could there be a free market economy in which competition would not be based on controlling information but on other factors—an economy in which competition would be on a different level (and, of course, not just in software but in other fields, too)?” (2001:60). The answer, of course, is “yes”, and the open source economy is a case in point. However, a more detailed inspection reveals, as we have seen

## On Sourcescapes and Filescaapes

earlier, that since the motivation of free F/OSS contributors is not the sale of their labour or its products but rather social reward, most forms of F/OSS are not dependant on the market. By no means is this the first example in modern history of a system that is not market-driven. Following Raymond's seminal essay *The Cathedral and The Bazaar* (1999) that contrasted open source systems (the bazaar) with closed systems (the cathedral) and discussed the social revolution manifested in practices of open ideation, Himanen finds a partial answer to his question in a comparison between the hacker ethic and the ethic of two prominent institutions: the academy and the monastery (2001:64-69). The monastery is the role-model of a closed system, where questions cannot be asked and social relations dictate production relations. The academy, on the contrary, is the role-model of an open system, in which knowledge is shared freely and production is communal.<sup>19</sup> Borrowing from academic disciplines and superseding the monastic protestant ethic, hackers, Himanen tells us, are able to constitute an economy in which passion and not money drive work. Hackers do not code to live. They live to code.

Free software and open source do not depend on any single company, organization, or market activity. They exist *beyond* the market. (Moody 2001:315). The Market as a facilitator of exchange changes its nature. A good example is given in the P2P context where the Market (with capital M) is broken up into an infinitude of smaller, ad hoc, markets. "Our goal is to build users a tool that allows them to easily publish content to the world" reads the tagline on Livewire's homepage (2003). Limewire, which is based on the open source Gnutella network, and the other P2P clients that work on other (proprietary) networks are focused on the dissemination of information and are in fact building a virtual marketplace for content. Moody's observation in this context should hence be understood as discussing the exiting, capitalistic market, not a market in general. How can we tell if these networks do not simply enable parasitic activities within an otherwise well-functioning market?

---

<sup>19</sup> So much so that Robert Merton (1973) thought information openness was such a key feature of renaissance science and academia that he called them 'communism'.

(I.e. the swapping of content that will only be produced for proper incentives.) All other things being equal, if the standard market didn't exist would F/OSS and P2P file sharing networks still thrive? I think their success is dependant on their capability to build a market of their own that can sustain value. If these systems can—and I think they do—return to a completely pre-capitalist market, an economic stage whereby the market becomes a forum for direct exchange and bartering among users who perceive such exchange as valuable—the systems will continue to thrive. In other words, I think that if the music industry really died, or if Microsoft would cease to exist both F/OSS and P2P will only benefit. But how exactly can such a direct exchange occur? How could it be valuable? How are values set and maintained?

#### **4.4. Exchange, Exchange-value and Use-value**

Accepting Baudrillard's call to shatter the mirror of production and instead focus on relations of signification and exchange, we are now faced with a puzzle. On one hand, we realize that production and labour are porous categories when it comes to F/OSS and file sharing but, on the other hand, exchange in this context must include non-economical, or at least not strictly economical, instances since the radical shift in the mechanisms that create value goes well beyond sheer economy. Exchange, as a category of social organization, needs to be analyzed. Steven Weber, in his forthcoming book *The Secret of Open Source* (2003) discusses software exchange in terms of collective action in the face of non-rival products. When people contribute a piece of software to the commons they forfeit very little, in fact, as we have seen, the nature of software (and other digital content) which allows making perfect replicas without harming the original source dictates that the use-value of multiple copies of a digital product or piece of content is exactly the same as the use-value of a single copy. What this means in practice is that a profitable exchange would entail giving up a copy of a software (or content) one already owns for ones he doesn't. The situation gets complicated when we deal with a non-rival system that allows users to partake without contributing. Using the metaphor of a collective cooking-pot Steven Weber asks:

## On Sourcescapes and Filescales

What is the underlying story that accounts for an exchange relationship here?...[ostensibly] because no one yet has any real incentive to contribute to that stock in the first place, the cooking pot will likely be empty. I believe the solution to this puzzle lies in pushing the concept of non-rivalness one step further. Software in some circumstances is more than simply non-rival. Operating systems like Linux in particular, and most software in general, are actually subject to positive network externalities. Call it a network good, or an anti-rival good. (Weber 2003: online version, p. 28).

In other words, we are faced with an amazing reversal: software in general and open source software particularly, becomes more valuable as it becomes ubiquitous. The use-value of software for any given user increases when its exchange value decreases. To take a specific example: as more lines of Linux code are written, the less significant or valuable any Linux exchange can be, and yet at the same time the use-value of Linux increases. This is an example of a technological system in which a change in quantity occasions a change in quality. The mass participation in open source communities is exactly what makes the system non-rival or anti-rival. This happens at two levels: first, because so many people contribute to the system the pot seems to fill itself (in our terminology from a given user's vantage point the sourcescapes and filescales seem to grow on their own); on a psychological level users are assured that their contribution will always be compensated for (although indirectly). Secondly, because so many people consume open source software, contributors are assured, at the social level, to gain social capital through the mechanisms discussed earlier.

Yet there is another underlying consideration when making an allowance for the setting of values and exchanges in said systems. The traditional dichotomy between consumers and producers collapses. First, we note that software consumers are generally referred to as users. Why? Because they do not consume the software or content, they use it. The ability of an open system's user (consumer) to use the software or content in more than one way is important here. For example, if the user happens to be a programmer, a writer, or a musician (in sum—a producer), he can increase his new asset's usability and hence its use-value because he can extend the potential uses or usability of the asset (software or content) above and beyond its originator's initial intent or capability. While this is evident for less-developed projects, experience shows that it is also true for mature open systems

## On Sourcescapes and Filesclapes

like GNU/Linux and Gnutella. Unlike the exchange of linen and coats which is final once the transaction takes place, the digital nature of the sourcescapes and filesclapes at hand encourages direct exchange but at the same time preserves the users' ability to modify the exchange a posteriori by altering or augmenting the source and changing the asset's functionality (e.g. the software's features, or one of the music piece's attributes). Hence, the breakdown of the traditional meaning of 'consumer' and 'producer' triggers a categorical shift in the meanings of exchange. Moreover, the new mode exchange prefers measures of participation and sharing over circulation of money and ownership changes, and it develops mechanisms to monitor these new values:

The key to peer-to-peer is participation and sharing. The more each individual participates and shares files, the better the experience is for everyone. Kazaa Media Desktop includes a Participation Level. This is a title or index assigned to each user based on the way in which they use the software. Basically, the more integrity rated files you share, and are uploaded from you, the better your downloading performance will be. The aim is to reward people who 'integrity rate' their files and share content they've created so it can be uploaded - which makes the peer-to-peer world work. This can be a little hard to control since it is up to other users to choose to download files from you, but if you create and share interesting files you'll give yourself a good chance of improving your level. (Kazaa 2003).

We will come back to this point later, when I'll show how these new values and categories are fetishized, but first, let's examine which other categories are produced.

## 5. New Categories – Old meanings

So far I argued that concepts of political economy change or diffuse when we try to extend them to the filesclapes and sourcescapes of F/OSS and P2P networks. Between the lines, we already encountered two new categories that emerge: Fun and Code.

### 5.1. *Fun, Passion, Entertainment*

In their study of the economics of open source, Lerner and Tirole puzzle over the non-economical motivations behind mass-participation in open vs. closed-source systems:

## On Sourcescapes and Filescales

An argument often heard in the open source community is that people participate in open source projects because programming is fun and because they want to be “part of a team.” While this argument may contain a grain of truth, it is puzzling as it stands; for, it is not clear why programmers who are part of a commercial team could not enjoy the same intellectual challenges and the same team interaction as those engaged in open source development. (Lerner and Tirole 2000: 18).

Their proposed answer is that “participation in open source projects [might enable programmers] to overcome labor market rigidities that make signaling in other ways problematic.” (ibid). The question is well formulated but their answer is not, even if we accept the signaling incentive paradigm, and not all do<sup>20</sup>. Instead of adhering again to concepts of labour and the market we should readily accept a real difference in focus: what really happens is that because open source systems, as our earlier discussion shows, do not include exchanges of money, the abundant non-economic motivations are highlighted. In this situation in addition to the creation of social capital and its exchange a premium is given to categories of inner subjective life like Fun, Passion and Entertainment. This is apparent when Torvalds discusses his life philosophy in his autobiography which is titled in a revealing manner *Just For Fun*:

There are three things that have meaning for life. They are the motivational factors for everything in your life—for anything that you do or any living thing does: The first is survival, the second is social order, and the third is entertainment. Everything in life progresses in that order. And there is nothing after entertainment. So, in a sense, the implication is that the meaning of life is to reach that third stage. And once you’ve reached the third stage, you’re done (Torvalds and Diamond 2001: xviii)

Raymond would agree only he calls fun and entertainment in other names

Software design and implementation should be a joyous art, and a kind of high-level play. If this attitude seems preposterous or vaguely embarrassing to you, stop and think; ask yourself what you’ve forgotten. Why do you design software instead of doing something else to make money or pass the time? You must have thought software was worthy of your passions

---

<sup>20</sup> See for example Benjamin Hak-Fung Chiao (2003) who thinks that the theory about maximization of profit through reputation is merely a postulate.

once...You need to care. You need to play. You need to be willing to explore. (Raymond quoted in Himanen 2001:6).

An underlying concept that can account for both Raymond's passion and Torvalds's fun is Thomas Kuhn's concept of puzzles and riddle solving in science (1962:140). As Kuhn explains, science presents puzzles to researchers whose intellect is stimulated by the ability to solve them. In much the same way hackers are stimulated by the challenges of software design and implementation in closed and open systems alike. In F/OSS, however, the openness raises the social reward to a degree that fulfills the needs Torvalds calls 'social' and allows the participants to fully immerse themselves in their passions or in sheer fun. Torvalds contemplates:

So what does this all mean? Probably not much. After all, my theory of the meaning of life doesn't actually guide you in what you should be doing. At most it says "Yes, you can fight it, but in the end the ultimate goal of life is to have fun." It does, to some degree, explain why people are willing and eager to work on projects like Linux on the Internet. For me, and for many other people, Linux has been a way to scratch two motivational itches at the same time. Taking survival for granted, Linux has instead brought people both the entertainment of an intellectual challenge and the social motivations associated with being part of creating it all. (Torvalds and Diamond 2001:248).

## 5.2. Code

We saw how the slogan "If it's not source, it's not software" (GNU Project Homepage 2002) epitomizes the logic of F/OSS. But beyond being software's operating instructions *code* regulates cyberspace at a much more fundamental level. In his cunning book *Code and Other Laws of Cyberspace* Lawrence Lessig defines what code in cyberspace is:

In real space we recognize how laws regulate—through constitutions, statutes, and other legal codes. In cyberspace, we must understand how code regulates—how the software and hardware that make cyberspace what it is regulate cyberspace as it is....Code is law. (2001:6).

Code is not only the law of cyberspace, it is also its DNA, its genotype, its architecture, in essence its source of existence. Access to the code, to the source, is therefore first and foremost an act of trust.

## On Sourcescapes and Filescares

People that have access to the code are automatically united in a social circle that ensures their well being. To take Steven Weber's cooking pot metaphor one step further: source code represents at one and the same time the ingredients of the soup and the fire that heats the pot and warms the entire clan.

Beyond these primary meanings *code* has auxiliary meanings. In his second book, *The Future of Ideas*, Lessig argues that "code is performative; what it says it does. Hence one learns about code not by just reading it but also by implementing it" (2001:57) Baudrillard uses the word *code* in a different context but in a surprisingly similar way. He finds that the departure from the mode of production into a mode of simulation forces one (the user) to establish a dialogue of signs with the system which is regulated by code.

It means that one goes from a system of productive forces, exploitation, and profit, as in the competitive system dominated in its logic by social labor time, to a gigantic operation game of question and answer, to a gigantic combinatorial where all values commute and are exchanged according to their operational sign. The monopolistic stage signifies less the monopoly of the means of production (which is never total) than the monopoly of the code. This stage is accompanied by a radical change in the functioning of the sign, in the mode of signification. (1975:127).

Baudrillard's code takes on different forms including the 'spoken word' as the highest sign of symbolic exchange. He discusses the maladies of the capitalistic system and finds that "Power consists in the monopoly of the spoken word; the spoken word (decision, responsibility) is no longer exchanged. But this situation is explosive...Just as in 1929 when the system almost died from an inability to circulate production, so today it is perishing from an inability to circulate the spoken word...We are faced with coding, super coding, universalization of the code, proliferating axiomatization of the capitalist system..." (1975:146). Lessig finds that "GNU/Linux is amazing in many ways. It is amazing first because it is theoretically imperfect but practically superior...What makes a system open source is a commitment among its developers to keep its core code public—to keep the hood of the car unlocked." (2001:105). And let us remember that this commitment is not just a wish—it is a command that is enforced by the GNU general public license. What makes the system

superior, of course, is exactly its reliance on open source, open code. The parallels are clear. Understanding code either as Lessig reads it—the performative law of cyberspace—or as Baudrillard reads it—the hegemonic law of the symbolic and hence of real space—we realize that open source systems alleviate some of the central fears that arise when we deal with closed systems: fears of monopoly, tyranny, and unjust use of power. For this exact reason in Microsoft’s antitrust case a key demand by the prosecutors was that Microsoft expose its Windows operating system’s source code. This shows how code as a category is, therefore, a concept metonymic of access to the world itself.

## 6. Conclusion

### 6.1. *A Fetishism of Exchange*

Appadurai warns us that the relationship between the cultural and economic levels of the new set of global disjunctures goes deeper than “being a one-way street in which the terms of global cultural politics are set” (1996:41). He finds that there is a subterranean current that drives the attitude towards and the relationship between consumption and production.

...fetishism [of the commodity, as Marx understood it] has been replaced in the world at large (now seeing the world as one large interactive system, composed of many complex subsystems) by two mutually supportive descendants, the first of which I call production fetishism and the second, the fetishism of the consumer.

By *production fetishism* I mean an illusion created by contemporary transnational production loci that masks translocal capital, transnational earning flows, global management, and often faraway workers...To the extent that various kinds of free trade zones have become the models for production at large, especially of high-tech commodities, production has itself become a fetish...

As for the fetishism of the consumer, I mean to indicate here that the consumer has been transformed through commodity flows...into a sign. (1996:42).

Marx employed the term *fetishism* to suggest the personification of man-made products and their influence over natural processes of human life. Appadurai uses the terms to identify the depletion of agency of consumers who become mere signs alienated not only from their labour but also from their

localities. Consistent with these meanings, I suggest that within F/OSS and P2P file sharing networks a further transition of fetishism takes place: a *fetishism of exchange* supersedes the fetishism of the consumer and of production. Raymond's gift cultures in which users gain social status not by what they own but by what they give away, or Torvalds's world-as-amusement-park philosophy in which fun is attained by a communal process of overcoming challenges, or Stallman's free software licensing scheme that ensures that the common software repository is safeguarded through highly regulated contribution to the source, or Gnutella's focus on competing agents in a sharing environment, or Kazaa's user participation and contribution meters—these are all examples of the primacy exchange gets over all other categories. What drives this transition? Three chief and mutually supportive processes. First, as we have seen, the mirror of production is shattered, and therefore production loses its center stage position, and obviously it is less desired, sought after, or fetishized—if anything, production in this context is taken for granted. Second, as I showed earlier, the dichotomy between consumer and producer is abolished, pulling the rug under the feet of producers that fetishize consumers through the mediascapes in the hopes of creating larger profits. The depletion of the consumer into a mere sign, deprived of all agencies is, to a large degree, reversed. The consumers are re-empowered through exchange, through the Net, through better visibility of the filescales and sourcescales. Third, the physicality of cyberspace (or rather its virtuality) ameliorates the devastating alienating feeling that is otherwise present in modern production and exchange. Through exchange consumers and producers alike can carve out their own spaces since, as discussed, each user becomes the center of his own world.

## **6.2. Areas for further inquiry**

In this paper I chose a critical, textual, methodology rather than an empirical field study, as I built this informationcritique. A natural next step for further inquiry would be to conduct a detailed 'cartographic' (epistemographic) review of the actual filescales and sourcescales involved (a good methodology for this task is presented with initial data by Ghosh and Prakash 2000). It would also be

beneficial to look at how F/OSS and P2P projects and products develop over time, and to circulate the above ideas among the online community to get more insiders' views. Another direction would be to pursue the unveiling of the sourcescapes and filescales in connection to issues that were beyond the scope of this paper like copyrights, government regulation, challenges posed by these transnational phenomena to nation-states, discrepancies in participation between the developed and the developing world, etc.

But perhaps the most urgent need of all is to extend the same method of inquiry I employed here to other realms of the network society. Online dating services, cellular communication networks, mobile computing systems, location and positioning platforms, grid computing—all these realms would be natural choices for unearthing, as all these spheres are being revolutionized in front of our eyes. As such they have grave implications on the network society: it becomes more and more networked, but what are the prices and rewards? The pace of the recent technological revolutions suggests that any theoretical tracks we shall build must be laid rapidly in order to timely guide the heavy wheels of the accelerating digital train. It took radio approximately 40 years to reach an audience of 50 million people from the day it started airing. It took broadcast television 13 years to reach the same score<sup>21</sup>. It took Linux less than 10 years to reach the masses. It took Napster and Kazaa less than one year. How short a while will it take the next revolution? At the end of this investigation many questions remain open. We have to be on our marks.

### **6.3. *Afterthoughts***

Lessig discusses the future of cyberspace in light of tensions between regulation by the state and regulation by code and our need to take action at an era of rapid technological change. His words are strong and compelling:

---

<sup>21</sup> Good historical data on broadcast radio and television can be found on the website of the Institute of Electrical and Electronics Engineers < [http://www.ieee.org/organizations/history\\_center/related\\_sites/bt.html](http://www.ieee.org/organizations/history_center/related_sites/bt.html) >

## On Sourcescapes and Filescales

There are choices we could make, but we pretend that there is nothing we can do. We choose to pretend; we shut our eyes. We build this nature then are constrained by this nature we have built. It is the age of the ostrich. We are excited by what we cannot know. We are proud to leave things to the invisible hand. We make the hand invisible by looking the other way. But it is not a great time, culturally, to come across revolutionary technologies. We are no more ready for this revolution than the Soviets were ready for theirs. We, like the Soviets, have been caught by a revolution. But we, unlike they, have something to lose. (Lessig 2001: 234).

Today when global capitalism aims to eradicate all forms of locality, indigenous creativity, and native knowledge, and to subsume all knowledge creation within capitalistic logic of production and exchange that endanger our innate freedoms—indeed we have a lot to loose. Evidently, for millions of users around the globe, though, hacker thought and its political economy present a tangible substitute to the standard capitalistic supremacy that otherwise seems inevitable. As Torvalds puts it, there is an alternative which he thinks is a universal choice. He muses:

This probably also means that if and when we ever meet another intelligent life form in the universe, their first words are not likely to be “Take me to your leader.” They’re more likely to say “Party on, dude!” Of course, I might be wrong (Torvalds and Diamond 2001:248).

Understanding F/OSS and P2P networks, their sourcescapes, filescales and their political economy, is, I believe, a necessary first step in seeing a bigger picture and protecting what we care for. What I have tried to show in this essay is that as these second wave revolutions wax some basic categories of political economy wane, others are imbued with new, sometimes surprising, meanings, while new categories and concepts are created. As we divulge the intricacies of this open system, it should be clear by now, that F/OSS and P2P are here to stay and that, fortunately, such revolutions have the capacity to—and indeed do—change the way we think about and understand our network society.

Shay David.

## 7. Works Cited

- Appadurai, Arjun. *Modernity at large: cultural dimensions of modernity*. London and Minneapolis: University of Minnesota Press, 1996.
- Bejian, Michelle. *The GNU Project FTP Site: A Digital Collection Supporting a Social Movement*. 1999. Available online at  
<<http://www-personal.si.umich.edu/~beejoo/gnuproject.html>>. Visited on April 10, 2002.
- Benjamin, Walter. *The Work of Art in the Age of Mechanical Reproduction*. Translated from the German by Harry Zohn. In *Illuminations*. Hannah Arendt, ed. New York: Schocken Books. 1968. pp. 217-251.
- Benkler, Yochai. "Coase's Penguin, or Linux and the Nature of the Firm", *Yale Law Journal* 112. New Haven: 2002. Available online at  
< <http://www.benkler.org/CoasesPenguin.PDF> > Visited on July 13, 2003.
- Baudrillard, Jean. *The Mirror of Production*. Mark Poster (trans.) St. Louis: Telos Press, 1975.
- Bourdieu, Pierre. The Forms of Capital. In John Richardson, Ed. *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood Press, 1986. pp. 241-258.
- Castells, Manuel. *The Internet Galaxy – Reflections on the Internet, Business, and Society*. New York: Oxford University Press. 2001a. Chapter 9.
- \_\_\_\_\_. *Informationalism and the Network society*. In Himanen, Pekka. *The Hacker Ethic: A radical approach to the philosophy of business*. New York: Random house publishing, 2001b.
- DiBona, Chris, Sam Ockman & Mark Stone.(Eds.) *Open Sources: Voices from the Computer Revolution*. Beijing: O'Reilly Associates: 1999.
- Escobar, Arturo. "Welcome to Cyberia: Notes on the Anthropology of Cyberculture." *Current Anthropology*, Vol. 35, No. 3. June 1994. pp. 211-231.
- GNU Project Homepage*. Categories of Free and Non-Free Software. Available online  
<<http://www.gnu.org/philosophy/categories.html>>. Visited on July 13, 2003.

## On Sourcescapes and Filescaapes

Ghosh, Rishab A. and Vipul V. Prakash. "The Orbiten Free Software Survey" *First Monday*, Vol 5, number 7 (July 2000), Available online at < [http://firstmonday.org/issues/issue5\\_7/ghosh/index.html](http://firstmonday.org/issues/issue5_7/ghosh/index.html) > Visited on July 13, 2003.

Henry, Patrick. "Give Me Liberty or Give Me Death". A Letter to the President. March 23, 1775. Available online at < <http://libertyonline.hypermall.com/henry-liberty.html> > Visited on July 13, 2003.

Himanen, Pekka. *The Hacker Ethic: A radical approach to the philosophy of business*. New York: Random house publishing, 2001.

Kazaa. Homepage < <http://www.kazaa.com> >

Kelty, Christopher M. "Hau to do things with words". *Knowledge and Society*, vol. 13, JAI Press, 2001a.

\_\_\_\_\_. *Scale and Convention: Programmed Languages in a Regulated America*. Unpublished Doctorate Dissertation. Submitted to the department of The History and Social Study of Science and Technology at the Massachusetts Institute of Technology. February 2000.

\_\_\_\_\_. "Free Software/Free Science", *First Monday*, Vol. 6/12. December 2001b. Available online at < [http://firstmonday.org/issues/issue6\\_12/kelty/index.html](http://firstmonday.org/issues/issue6_12/kelty/index.html) > Visited on July 13, 2003.

Kuhn, Thomas. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press. 1962.

Hak-Fung Chiao, Benjamin. "An economic theory of free and open source software: a Tour from lighthouse to Chinese-style socialism" Working paper. Version b1.24 July 2, 2003. Available online at < <http://cess.nyu.edu/hfc> >. Visited on July 13, 2003.

Hayes, David L. "Internet Copyright; Advanced Copyright Issues on the Internet Part V". *Computer Law & Security Report*. Volume 17, Issue 4, 31 July 2001. pp. 219-232

Hunter, Philip. "DRM: Whose Rights are They Anyway?" *Computer Fraud & Security*. Volume 2002, Issue 2, 1 February 2002. pp. 14-15

Iannacci, Federico. "The Economics of Open-Source Networks" London School of Economics Working paper. Forthcoming. Available online at

## On Sourcescapes and Filescales

- < <http://www.idei.asso.fr/Commun/Conferences/Internet/OSS2002/Papiers/Iannacci.PDF> >  
Visited on July 13, 2003.
- Lash, Scott. *Critique of Information* London: Sage Publishing, 2002. Chapter 1 available online at  
< <http://www.goldsmiths.ac.uk/cultural-studies/html/inform.html> > Visited on July 13, 2003.
- Levy, Steven. *Hackers: Heroes of the computer revolution*. New York: Penguin Books, 1984.
- Lerner, Josh and Jean Tirole. *The Simple Economics of Open Source*. National Bureau of Economic Research, Working Paper 7600, © 2000. Available online at  
< <http://www.nber.org/papers/w7600> > Visited on July 13, 2003.
- Lessig, Lawrence. *Code and Other Laws of Cyberspace*. New York: Basic Books, 1999.
- *The Future of Ideas*. New York: Random House, 2001.
- Long, Roderick T. "The Libertarian Case against Intellectual Property Rights" *Formulations*, autumn 1995, < <http://libertariannation.org/> > Visited on July 13, 2003.
- Man, Charles C., "The year the music died", *Wired Magazine*, Vol 11.02, December 2002. pp 90-93.
- Marx, Karl. "Wage Labour and Capital" in Robert C. Tucker (ed) *The Marx-Engles Reader*. New York and London: W.W. Norton & Company, 1978.
- \_\_\_\_\_ *Capital* in Robert C. Tucker (ed) *The Marx-Engles Reader*. New York and London: W.W. Norton & Company, 1978.
- Merton, Robert. *The Sociology of Science: Theoretical and Empirical investigations*. Ed. Norman Storer. Chicago: University of Chicago Press, 1973, quoted in Himanen Pekka. *The Hacker Ethic: A radical approach to the philosophy of business*. New York: Random house publishing, 2001. p. 46.
- Moody, Glyn. *Rebel Code: Inside Linux and the Open-Source Revolution*. New York: Perseus Publishing, 2001.
- Napster*. Homepage. Available online at < <http://www.napster.com> > Visited on July 13, 2003.

## On Sourcescapes and Filescales

“*Napster files for Bankruptcy*”. IDG News Service, June 2002. Available online at  
< <http://www.pcworld.com/news/article/0,aid,101604,00.asp> > Visited on July 13, 2003.

Open Source Organization. Homepage. Available online at < <http://www.opensource.org/index.html>  
>. Visited on July 13, 2003.

Pavlicek, Russel. C. *Embracing insanity: Open Source Software Development*. Indianapolis, Indiana:  
SAMS Publishing, 2000.

SourceForge.Net. Homepage < [http://sourceforge.net/docman/display\\_doc.php?docid=6025&group\\_id=1](http://sourceforge.net/docman/display_doc.php?docid=6025&group_id=1) >.  
Visited on July 13, 2003.

“*Children’s Access to Pornography Through, Internet File-Sharing Programs*” Special Investigations  
Division, Committee on Government Reform, U.S. House of Representatives. Washington  
DC: 2001.

Raymond, Eric. *The Cathedral and the Bazaar Musings on Linux and Open Source by an Accidental  
Revolutionary*. Beijing: O'Reilly & Associates. 1999. Also available online  
< [http://www.firstmonday.dk/issues/issue3\\_3/raymond/](http://www.firstmonday.dk/issues/issue3_3/raymond/) >. Visited on July 13, 2003.

-----, Interview with the author. April 2002.

Risan, Lars. *Hackers Produce More Than Software, They Produce Hackers*. 2000.  
<[http://folk.uio.no/lrisan/Linux/Identity\\_games/](http://folk.uio.no/lrisan/Linux/Identity_games/)>. Visited on July 13, 2003.

Ropelato, Jerry. “*Peer-to-Peer Pornography -Kids Know, Do Mom and Dad?*” Internet Filter Review  
2003. Available online at < <http://www.internetfilterreview.com/peer-to-peer-file-sharing.html>  
>. Visited on July 13, 2003.

Simmel, Georg. *The Philosophy of Money*, Tom Bottomore and David Frisby (trans.) Second  
enlarged edition London and New York: Routledge, 1978.

Smith, Adam, *An Inquiry into the Nature and Causes of the Wealth of Nations*. Methuen and Co., Ltd.  
1904. Online version available at < <http://www.econlib.org/library/Smith/smWN2.html> >.  
Visited 28 July 2003.

## On Sourcescapes and Filescales

Stallman, Richard. "Why Software Should Not Have Owners". In *Sarai Reader 2001: The Public Domain, Free as in Freedom': Software as Culture*. 2001. pp. 176-180. Available online <<http://www.sarai.net/journal/pdf/175-227%20Free.pdf>>. Visited on July 13, 2003.

-----, Interview with the author. April 2002.

Torvalds, Linus. "What Makes Hackers Tick? A.k.a. Linus's Law", in Himanen Pekka. *The Hacker Ethic: A radical approach to the philosophy of business*. New York: Random house publishing, 2001.

Torvalds, Linus, and David Diamond, *Just For Fun: The story of an accidental Revolutionary*. New York: Harper Business, 2001.

Tyler, Joe. "Weapons of Mass Communication", *Timeout NY*, Issue No. 406, July 10<sup>th</sup> 2003. pp 13-17.

Vonnegut, Kurt. *Cat's Cradle*. New York: Bantam Doubleday Dell Publishing Group Inc., 1963.

Young, Robert. "Giving it all away: How Red Hat Software Stumbled across a New Economic Model and Helped Improve an Industry" in DiBona, Chris, Sam Ockman & Mark Stone. (Eds.) *Open Sources: Voices from the Computer Revolution*. Beijing: O'Reilly Associates: 1999. pp 113-125.

Weber, Max. *The Protestant Ethic and the Spirit of Capitalism*. Talcot Parsons (trans.) London and New York: 2001. (First published by Allen and Ulwin 1930).

Weber, Steven. *The Secret of Open Source*. Boston: Harvard University Press, forthcoming 2003. A preliminary version is available online as "The Political Economy of Open Source" BRIE Working Paper No. 140, at <<http://brie.berkeley.edu/~briewww/pubs/pubs/wp/wp140.pdf>> Visited on July 13, 2003.

"What is Copy Left?" *Sarai Reader 2001: The Public Domain, Free as in Freedom: Software as Culture.*" p. 181. Available online <<http://www.sarai.net/journal/pdf/175-227%20Free.pdf>> Visited on July 13, 2003.

Zeitlyn, David. "Gift economies in the development of open source software: Anthropological reflections." *Research Policy* Special Issue on Open Source Software Development the University of Kent at Canterbury, Forthcoming (2003).

