

Copy, Rip, Burn

The Politics of Copyleft
and Open Source

David M. Berry



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CONTENTS

<i>Acknowledgements</i>	ix
<i>Preface</i>	x
1. The Canary in the Mine	1
2. The Information Society	41
3. The Concept of the Commons	79
4. From Free Software to Open Source?	98
5. The Contestation of Code	147
6. The Poetics of Code	188
<i>Notes</i>	202
<i>Bibliography</i>	234
<i>Index</i>	253

For Trine, Helene and Henrik.

Prometheus: I caused mortals to cease foreseeing doom.

Chorus: What cure did you provide them with against that sickness?

Prometheus: I placed in them blind hopes.

Chorus: That was a great gift you gave to men.

Prometheus: Besides this I gave them fire.

Chorus: And do creatures of a day now possess bright-faced fire?

Prometheus: Yes, and from it they shall learn many crafts.

Chorus: These are the charges on which –

Prometheus: Zeus tortures me and gives me no respite.

Aeschylus, *Prometheus Bound*

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PREFACE

The world is one and common to those who are awake, but that everybody who is asleep turns away to his own.

Heraclitus (2006, Fragment 89)

This book critically engages with the activities and theoretical exchanges between the free/libre and open source software groups who write and share computer code online. I place these groups in the context of the expansion of intellectual property rights and look at their discourses surrounding the enclosure of the ‘intellectual’ commons. In particular, I explore how free/libre software and open source software (FLOSS) articulates productive forms of self-knowledge and discipline (such as through discursive formations and code), which appear to establish a potential for uncoordinated and decentred models of creativity. In doing so, I investigate how code designates what is prescribed and what is not, what is articulated and what is silenced; how code structures our lives and our subjectivity. I hope to uncover the way in which the open source and free software groups are challenging our existing liberal categories (around cultural production, knowledge ownership and authorship) both in economic terms (that is, as a new form of commons-based peer production) and in terms of political liberties (for example, the question of free speech, democracy and its connection to code).

First, I am interested in the disciplinary nature of knowledge and power and this is an important element in my political-economy-influenced approach. Secondly, I am interested in political intervention as practice. Thus this book forms a normative project of both explanation and a contribution to further praxis in the field of creative research. Thirdly, I wish to offer readers a set of concepts that can be used both to think creatively about the questions I raise but also to offer political possibilities.

Heidegger (2000) called for a more profound interpretation of the epistemology of technology, arguing that technology is a special form of knowledge – a form of truth or disclosure. Here then I would like to explore the extent to which the social practices of the FLOSS groups are introducing a rupture or break with the immediately given and accepted ‘nature’ of technology. That is, rather than abandoning technology, these groups foreground technological approaches to the world and bring the given of technology into fuller consciousness. In a related manner, a *politics of code* asks fundamental questions about human relationships with complex technologies, technologies whose complexities sometimes exceed the human ability to manage their interconnected parts. Below I examine the activities and discourses of the FLOSS groups’ approach to a ‘politics of code’ and whether they could contribute to such a Heideggerian project of disclosing technology.

Much of the literature on the open source movement is scanty theoretically – essentially popular journalism – or takes a particularly liberal approach to the understanding of the subject. Questions regarding the motivations of actors are addressed as individual preferences of groups operating within the sphere of artistic or cultural production and this individualistic outlook informs many rational-choice-oriented approaches to this issue.¹ To date a great portion of the literature is heavily concerned with questions of legal theory and intellectual property connected to the idea of the Romantic artist. The Romantic artist is the idea of an original author or *auteur*, as the French describe ‘artistic’ film directors, who has somehow wrought an original creation from nothing (*ex nihilo*), which is sometimes considered to be an act of genius. Clearly this liberal and one-dimensional explanation of creativity leaves a lot to be desired; in contrast I argue that creativity requires a social environment to flourish.²

By focusing on questions of collective creativity and desire I feel that we are better able to question the notion of the Romantic artist and also to offer the possibility of collective action as a creative moment. The common is a key aspect to thinking in terms of the ways in which a ‘technology of the common’ could

raise critical awareness of the collective moment in production. But it also contributes positively to new ways of approaching and applying methods of working, which legitimate and encourage the flourishing of social action and political practices.

This book also aims to question the assumptions of the ‘information’ or ‘creative’ society. One of the most common of these is the argument that ‘incentivation’ can encourage individual creativity and hence economic growth. Thus the motivation for the artist, musician, designer or writer is explained purely through their desire for profit; to stimulate their creativity and innovation more intellectual property rights (IPR) legislation is required. The argument for a ‘creative’ economy can therefore be used to cast everyone in the unlikely Thatcherite model of one-dimensional profit-motivated entrepreneurs rather than complex and multifaceted human beings. Additionally, there is built into much of the legislation a bias towards an understanding of creativity through the creative acts of lone genius, singularly creating works out of nothing. But as we must constantly remind ourselves, behind every musician, composer or author there is an army of teachers, friends, peers, producers, editors and managers who all contribute in different ways to the final artefact. No woman or man is an island and creativity is always a collective achievement.

There is a tension between the monopolistic granting of property rights in information and the democratic needs to expand the flow and access to this information. Copyright and other intellectual property laws seek to restrict access so that only those able and willing to pay might make use of the work. This restriction of access may therefore actually reduce the ability of certain members of society to get the information they require in order to make informed social, economic and political choices and widen the gap between an ‘information rich’ and ‘information poor’. The actions of the free software and open source movement which are predicated on a sharing of both the structural code and the content that sits upon it (i.e. the algorithms and meaning of the code), places it squarely in conflict with the owners of copyright and other intellectual property rights. It does so particularly when understood in relation to the hugely profitable content industries,

which must be able digitally to restrict distribution and copying in an informational market relying on a notion of scarcity. This is because if the code is open, there is no way in which the protection methods, commonly known as digital rights management, which serve as the locks on creative works, can be kept secret. This is one of the critical issues that serves to explain the current actions of the content industries to undermine the free software and open source movements, and their focus on hardware driven technological protection that cannot be bypassed through software (e.g. trusted computing). If that fails (as increasingly seems to be the case) then it will not be surprising if the next approach is the co-option of FLOSS into new models of production (and Web 2.0 companies, such as Google, can be understood in that light).

As governments around the world begin to consider their legislative agenda for the expansion of copyright and patents (mostly influenced by corporate financed lobby groups), it is time to ask whether the steady expansion and extension of the privatisation of shared knowledge are things we can afford to ignore. It is crucial that questions about the new political economic structure of knowledge are critically discussed in the public sphere.

Globally, manufacturing is being eclipsed in the rich world as the internationalisation of trade and globalisation encourage the movement of capital and labour around the globe to cheaper locations. It is sometimes argued that the industrial base upon which these world economies have depended for centuries is shifting to that of information, knowledge and communications. Thus we may be standing at the crossroads of a new form of economic system that is a creation of the North, the holders of the majority of the world's copyrights, patents and trademarks.

As we enter a knowledge age, increasingly structured by corporate desires for profit, democratic debate within civil society helps citizens and publics to contest the ownership, control and direction of the 'information' society and potentially shape it towards more democratic ends. I hope that this book will contribute to that debate.

1

THE CANARY IN THE MINE

There's something I don't understand about the open-source movement. Oh, I understand open-source intellectually. I understand that it means that source code is open to be read and reviewed and perhaps revised by anyone who wants to... What I don't understand is something more sociological. I don't understand who those folks are who want to do all that code reading and reviewing for no recompense. It goes against the grain of everything I know about the software field. (Glass 2000: 104)

Man produces himself through labour. (Marx and Engels 1999: 21)

In 1995, two scientists from the University of Mississippi were granted a patent on a method of increasing the effectiveness of treatments of wounds and cuts by the use of turmeric in a 'special preparation'. They calculated that the estimated market for this product could be worth billions of dollars a year. Turmeric as a treatment for minor skin cuts and wounds has been used in India as a traditional remedy for hundreds of years. However, intellectual property law in the US does not see anything that constitutes 'originality' or 'inventiveness' in traditional remedies and so is unwilling to grant any protection to traditional knowledges.¹

In America in 1998, a man who had his spleen removed by doctors as treatment for leukaemia discovered that the doctors had proceeded to patent some of the genetic material they removed from his body. After the patient sued the doctors, the court found that the man did not have any claim to his own bodily material as it was a 'naturally' occurring substance and he was classified as a 'source' who had 'abandoned' his genetic material. Yet it was argued that the doctors, due to their 'expertise' and 'ingenuity', had contributed to an 'original' and creative act by 'discovering' this cell-line and were awarded the property rights

to this portion of the patient's genetic code.² The products that are being developed using his genetic material are estimated to be worth over \$2 billion annually (Boyle 1996: 22–4).

In 2002, a nursery in the US innocently painted pictures of Disney characters on the walls for the amusement of the children, aged between one and five years old, who played there. Somehow, the Disney corporation (estimated market capitalisation – \$20 billion) found out and their lawyers sent a cease and desist letter to the nursery explaining that this represented an infringement of copyright. They warned that the nursery should remove the offending paintings and images from their walls. Failure to comply would mean an expensive and drawn-out court action that would most likely bankrupt the nursery. Even though the children from the nursery went on national television to plead for their beloved nursery walls, the Disney representative claimed that they viewed the nursery as a for-profit organisation and didn't feel a need to distinguish between it and other organisations. They stated that any infringement by anybody else would be dealt with in the same harsh way (Cox, quoted in Coombe 1998: 53).

In 2005 in the UK, the government discussed developing a new campaign to teach children and young people that copying music, pictures or text without permission is 'theft' and that intellectual property should be respected in the same way as physical property.³ The programme is largely funded by the content-industry (e.g. music, film and publishing multinationals) intent on educating children into a 'better' understanding of how intellectual property should be used. The aim is to teach children that whenever they produce any work they should mark it with a copyright symbol to prevent other people (presumably also children) 'stealing' from them. Nobody seems to have borne in mind that children learn by repetition and copying, and teaching 'property' rights in this corporate-approved way is likely to undermine learning and education. Combined with this 'education' programme, the Federation Against Copyright Theft (FACT) has been running a campaign attempting to draw a link between terrorism and copyright infringement (the poster images from which were hastily removed from the web following a critical outcry).⁴ Even

language itself is being manipulated with our ongoing corporate re-education about copyright infringement through compulsory property-theft DVD trailers, cinema adverts and assertive control of trademarks and corporate slogans.⁵

Again in 2005, a reborn Napster (the company that was originally infamous for allowing the allegedly illegal copying of music until it was forced into bankruptcy by the music industry) introduced a service that for \$15 a month allows customers to rent music online by downloading music to your portable music player from their catalogue. In contrast to the download purchase-type services (such as Apple's iTunes), this service is designed to be more like an online music library that you rent from month to month which effectively gives you a huge variety of music from which to choose. The service is aimed particularly at those between the ages of 15 and 25 whom the music industry has identified as most likely to pirate and download illegal music. However, in contrast to purchasing the music, should you fail to keep up payments then the technology will automatically cancel your rights to play on your computer and portable player and your Napster music collection will vanish (Rothman 2005).

Lastly, in 2007, volunteers continued to develop a computer operating system collaboratively over the Internet called GNU/Linux (Stallman 1999). Started in 1991, GNU/Linux has challenged our understanding of the production of complex software projects and the best method of organising, controlling and managing them. In short, GNU/Linux eschews traditional methods of copyright protection and code secrecy in favour of a common-ownership model⁶ (known as *copyleft*). It is then freely distributed with the source code for little or no cost and encourages contributions, comments, criticisms and bug-fixes from its users and developers. This has led to an exponential rate of growth both in terms of its code quality (which directly relates to the workable nature of the software in a production environment) and also in terms of its feature-list and capabilities. It is now a viable challenger to Microsoft Windows and is taken seriously as an important infrastructural software product (most noticeably supported by IBM).

These cases and wider arguments over intellectual property rights (IPR) may seem disconnected and distant from our everyday lives and worries. After all, it seems unlikely that multinational corporations would be bothered to look into all our collections of music, film and images. The worlds of IPR, legal copyright cases and patent infringement do not usually impinge on the lives of individuals going about their daily activities. However, corporations are becoming increasingly assertive and aggressive in their claims to rights in intellectual property, as well as increasing their holdings and portfolios. It appears that across the corporate world a new awareness is growing of the possibilities of profiting from the ownership of ideas, concepts, expressions and processes.

These examples serve to illustrate that the relationship is shifting between culture, creativity, and the ownership and control of intellectual property rights. The reconfiguration of IPRs is aimed at maximising profit through exclusion but may have repercussions across the whole of our social lives, transforming our ability to interact, contest meaning and to take part in culture and creativity.

IPR debates find their context in a broader shift, the move towards an 'information society', however this is conceived (and there are contradictory theories as to the extent to which there has been any change at all). However, it would be impossible to deny that governments, particularly in the North, are strengthening their intellectual property laws, and pressuring other countries to follow their lead. They are also investing heavily in the production of information, communication and affective services, either directly through subsidy and tax cuts, or more generally in terms of discursive shifts and exhortations for the population to engage in 'life-long learning' and 'creative' work and to become more entrepreneurial and alert to new technology. One only needs to look at the profound changes operating at the level of the university (and instituted through legislative and funding changes by central government), with the shift from a so-called Mode 1 form of knowledge generation (i.e. 'traditional knowledge' generated within a particular disciplinary and primarily academic

context) to that of Mode 2 knowledge (i.e. generated outside academic institutions in broader, cross-disciplinary social and economic contexts) (Gibbons et al. 1994). Increasingly, private funding is being sought to drive the research agenda (private-sector partnerships, research institutes, and research and technology parks on campus being the most prominent examples), research outputs are monitored and controlled, and non-performative individuals and disciplines, particularly in the humanities, are pressured through closure and funding difficulties. This new institutional justificatory discourse was demonstrated by Professor Philip Esler, chief executive of the Arts and Humanities Research Council (AHRC) in evidence presented to the Science and Technology Select Committee in Parliament, where the value of cultural research is no longer defended in terms of a public good, but rather is solely linked to economic growth and profit:⁷

It may be that our leverage role will be sufficient here because as you go around the universities you discover that many of them are now introducing knowledge transfer into the heart of their research activity which is where I think it should be; it should be embedded in research activity from the beginning. Some of them are saying to their staff, 'Don't give us an application to a Research Council unless you have addressed the knowledge transfer possibilities' and 'Your promotion application will be helped if you have a knowledge transfer profile', so these sorts of things are already happening.

(HC 310-I 2007: Q35)

Many theorists are now arguing that we are on the cusp of a profound change in the way in which our societies manage and organise the production of both material and immaterial goods. This has been variously termed biopolitical, immaterial or informational production and is said to require new laws, norms and institutions if it is to be financially viable or profitable.⁸ This 'new' economics is being constructed through building on the existing institutional intellectual property system (through, for example, copyrights, patents, design rights and trademarks), new legal frameworks and new norms of criminality, but also

through the use of technical devices that can actively enforce or deter actions that infringe these legal rights and actions deemed unacceptable to informational property owners. These are known as *digital rights management* techniques.

Although these changes affect all aspects of agricultural and industrial production from plant and seed ownership to computer-controlled manufacturing, the focus of this book is particularly on the effects on computer code of this widespread drive to control and own information. By seeking to extend property rights to intellectual artefacts (immaterial products) and social relationships (business processes and methods etc.) these interests are strengthening and extending the concept of informational or immaterial proprietorship.

These issues are clearly global; however, due to space and analytical considerations this book concentrates mainly on the geographical areas of the United States and the European Union, and particularly on the free software and open source groups located within those areas. FLOSS, as a networked and increasingly global set of practices, clearly spreads beyond those boundaries; however, historically, the majority of the hacker debates have been located in the US/EU areas. Nonetheless, alternative sites of contestation should be expected in the future (particularly from Japan, Brazil and China) and this should open up interesting avenues for future research.

Throughout this book these issues will be explored with particular attention being paid to their relevance to understanding the political economy of FLOSS together with an analysis of the meanings and discourses of the groups studied. This methodological approach is broadly similar to that which Silverstone (2003) refers to as a 'double articulation', whereby he highlights the importance of paying attention in research to both the material and symbolic dimensions.

The methodological approach taken in this book intends to draw upon the empirical, theoretical and policy work concerned with FLOSS through a theoretically informed understanding of the social order in which FLOSS is being studied. That is, in similarity to cultural studies, this research is concerned with the

construction and exercise of power. In doing so, this approach attempts to keep in mind the importance of meaning and ‘how it is produced and through particular expressive forms it is continually negotiated and deconstructed through the practices of everyday life’ (Golding and Murdock 2000: 71).

This book will use a combination of Laclau and Mouffe’s discourse theory (Laclau and Mouffe 2001; Phillips and Jørgensen 2002) together with elements of Fairclough’s Critical Discourse Analysis (Fairclough 1992) to analyse both the contents of texts and how wider sedimented hegemonic discourses within society may intervene to suppress discursive conflict within this order of discourse.⁹ This, it will be argued, may lead to a naturalisation (Fairclough 1992: 10) of the open source movement’s (OSM) order of discourse.

Discourses can also interpellate individuals by creating subject positions for people to occupy. They imply certain expectations about how to act, what to say and what not to say (Phillips and Jørgensen 2002: 41). Examinations of the discourses of the Free Software Foundation (FSF) and the OSM will demonstrate the subject positions within their discourses and how they are constructed. The rights and obligations of these positions are different in the two traditions and the hierarchical relationships and interaction will be outlined. These have social and political implications (Phillips and Jørgensen 2002: 40). For example, the FSF utilise a discourse of ethics and a discourse of freedom (see Stallman 2003b), whereas the OSM draws on discourses of neoliberalism and technical efficiency (see Raymond 2001).

The critical political economy tradition that informs this research differs from economics in the four respects outlined by Golding and Murdock:

First, it is holistic; second, it is historical; third, it is centrally concerned with the balance between capitalist enterprise and public intervention; and, finally... it goes beyond technical issues of efficiency to engage with basic moral questions of justice, equality and the public good.

(Golding and Murdock 2000: 72–3)

Here, I discuss FLOSS as a 'limited totality' through a broadly political economy approach to the ownership and control of FLOSS by looking at the ideas, material capabilities and institutions that structure the social practices of the participants (Cox 1996: 98). This is combined with a critical examination of the meanings embedded within the discourses and social practices of FLOSS practitioners through close analysis of the discourses produced by the FLOSS actors themselves (see Fairclough 1992; Laclau and Mouffe 2001). FLOSS is a result of the interaction of the varied actors involved in FLOSS production, including the programmers and hackers themselves (highlighting the role of ideas), the particular technologies that they utilise and build (the material capabilities) and the networked arrangement of their associations and programming groups, which also include corporations and non-profit organisations (the institutions). In this book I am particularly interested in how questions of power are manifested in FLOSS (such as over the direction of FLOSS development – what is built and why not something else?) and how, even in networked groupings seemingly somehow beyond capitalism or in contradiction to it, certain actors can maximise their influence by their ability to control key resources. These actors use both material ownership (in terms of the copyrights on particular pieces of the FLOSS code or technology, for example) but also discursive argumentation and justification (that is, through ideas), and control of the institutions that are formed within the networks of practice that exist within FLOSS development (one revealing example is Linus Torvalds who is described, rather alarmingly, as the 'benevolent dictator' of Linux).

Two theoretical strands, namely free software and open source, dominate FLOSS and their followers express their ideological positions in terms of a universal or general interest, rather than of their own particular interest (Cox 1996: 99). That is, both attempt a hegemonic conception of FLOSS which involves the utilisation of all their key resources, arguments and ability to motivate and influence different actors (this is explored in particular in Chapter 4). Additionally it is important to note that I refuse to identify either structure or agency as the final determinant of social relations.

Rather, I argue that changes within FLOSS are overdetermined, in other words, 'no single set of forces or structures can provide change alone, nor any finally resist change alone' (May and Sell 2006: 33). This is not to argue that the actors involved have complete freedom: their options are constrained by structural forces, organisations and norms. Their actions are embedded in larger structures which can constrain and empower certain actors in disproportionate ways, nonetheless, they 'structure conditions but [do] not determine agency' (May and Sell 2006: 34).

Many of the early researchers into FLOSS used the concept of the gift economy as a means of explaining the behaviour of the FLOSS participants (Ghosh 1998; Barbrook 1998; Lancaster 2001; Raymond 2003), drawing particularly on the work of Mauss (2002) and Hyde (2006) and their explanation of the gift in a number of different societies through which they sought to link the social structuring of a gift economy to the organisation and structure of the group.¹⁰ A gift economy is one in which goods or services are rendered without any market exchange taking place, for example the payment of monies or the bartering of goods. Usually, though, the exchange is mediated through cultural forms, such as a party or feast, and the participants are guided in their gift-giving by particular cultural norms (see Hyde 2006). Barbrook (1998) argues that the gift or potlatch¹¹ economy is part of the wiring of the Internet: gift giving is technologically determined by the structure of the code that makes up the communications networks and as such we should not be surprised to see certain gift-based cultures on the Internet. This form, though, he argues, is a compromised form that remains in symbiosis with commoditised capitalism in online spaces. Ghosh (1998), on the other hand, argues that it is a 'cooking pot' economy, that 'works on a ... different model, of barter and division of labour (I provide the chicken, you the goat, she the berries, together we share the spiced stew)' (Ghosh 1998). Both of these models attempt to explain the gift-like nature of the contribution of software code to a larger project; however, a gift economy is usually made up of reciprocal gifts, which is not the case for FLOSS software. Indeed, one of the puzzles of FLOSS is

that although contributions are made, there is nothing given in return – there are no transactions between parties in most FLOSS development (although some have questioned whether reputation ‘earned’ is the return on investment – see below). The question of the circulation generated by FLOSS is one that I will explore later in the book, and certainly understanding FLOSS as connected to the circulation of capital is a critical part of understanding the motivations and social practices of FLOSS actors.

The World Wide Web

Our lives are increasingly mediated through digital technology (Castells 2001). Through computers, technical devices and countless databases, servers and storage systems, information has grown in importance and value. But, as information itself has become more crucial to modern society, so too has the desire to profit from it (Litman 2001: 89–99). Indeed, information, when viewed as a potential form of profit, justifies new ways of legitimating its ownership as a property right. And, of course, information when viewed as property seems to require fences; virtual fences that can both identify it as being owned and prevent others from taking it without paying (Bettig 1996; May 2000; Drahos and Braithwaite 2002: 15). This has begun to affect the way in which certain technological developments on the web are evolving. Online business models are constantly shifting to try to take account of the open-publishing model that currently dominates the Internet. This has taken place in conjunction with a growth in interactivity and user practices that have, to a large extent, populated the web with content. In fact, many of the recent moves in technology companies have been aimed at harnessing the creative power of their users in order to valorise their production, a process that has been described as that of ‘free labour’ (Terranova 2004: 73–94), in the sense of unpaid, user-generated content that is linked to profit-producing technologies such as subscriptions, services, advertising, social networking and so on.

Web-pages themselves are collected into groups of decentralised websites that lie within open unrestricted areas of access connected

by hyperlinks written mainly using HTML, itself an open standard that presents its 'code' as a freely viewable source code. This 'overt intertextuality' has the result that any user can access, view and download pages, as in principle every text is linked to every other text (Mitra and Cohen 1999: 182–3). This, combined with the persistent nature of the Internet's structure, can give rise to the mistaken assumption that all texts are created in a public domain or public sphere (Jones 1999: 5; Mitra and Cohen 1999: 183). Additionally, texts, such as web-pages, can remain in existence long after the author has forgotten about them and can be easily replicated in multiple forms across the Internet – a feature of Usenet groups, for example, that early contributors could not have foreseen (Sharf 1999: 246). These are where some of the current issues of copyright pervading the Internet are unfolding through numerous copyright-infringement cases and legal challenges (Lessig 1999).

The Internet has also provided the environment for new forms of social practices that are remarkable in their diversity, accessibility and persistence and which have excited researchers in many different disciplines. This social activity is predominantly manifested within code and through discourse, articulated online within a textual substrate which the Internet facilitates in low-cost reproduction, instantaneous dissemination and radical decentralisation. Further, due to the Internet's digital substructure the texts are stored in online repositories, web-pages, caches and so on, enabling easy accessibility and retrievability of texts which can be later viewed and easily manipulated without data loss or corruption.

The technologically flexible, dialogical and fluid nature of the Internet, which allows users to post and read texts with little restriction, lends itself to being conceptualised as a vast open-access public sphere, a position that is highly contentious (Bakardjieva and Feenberg 2001). Indeed, assumptions of the innate *public*-ness of the Internet contribute to some of the problems of understanding the Internet, due to the loaded nature of terms such as public and private and the difficulty of applying them to the online world (Herring 1996; Waskul 1996; Ess 2001). The

concepts of public and private are highly contested in the offline world too (Benhabib 1992; Habermas 1992), and I therefore use a provisional and minimal conception of 'private' and 'public' throughout this book.

Additionally, when using the Internet with a browser, the digital processes taking place behind the scenes operate on the basis of making copies. The browser is continually downloading web-pages and displaying them for the user to read and view, held locally as a 'copy' of the web files located on the website. In fact this is a critical issue when understanding how control over copyrights indicates who will have power over the digital environment in the future. To place a file on the web server or computer hard disk is to make a copy, to send via email is to make multiple copies, even to play a file as an MP3 or edit it as a document is to work on copies downloaded and opened temporarily into memory. These copies can then lurk in caches that are hidden in often-unexplored areas of the computer hard disk. But they are all copies, and copying is expressly a right that is controlled by a copyright holder. In the digital world, the owner of the copyright will no doubt assert the right to control the shape and direction of technologies, and to determine their use and the consumption models in this post-modern economy (as we have seen with Napster's enforced bankruptcy, for example). Digital technology functions by copying and manipulating digital files, an issue that conflicts directly with the copying right held by IPR owners. It is no surprise, then, that copyrights should become a key source of conflict in the information society as the common-sense dichotomy over 'legal' private copying (that is, as fair-use/dealing) is challenged when digital technology and networking are combined. When every node on a network can share an identical copy of any file, the difference between a public and private use becomes extremely blurred. It is no surprise, then, that the debate has moved to remove or outlaw the private rights for using digital files which in other media such as VHS and vinyl records were considered completely legitimate, such as making a tape backup, photocopying sections or selling on the goods (that is, the 'first sale' doctrine¹²).

Open Sources

The Free Software Foundation was established in 1985 and dedicated itself to promoting computer users' rights to use, study, copy, modify and redistribute computer programs. Over the past 30 years the popularity of free software (and its ideological competitor, open source) has increased dramatically, and has had a profound effect on computer developers' practices, challenging the activities of many major software firms (such as Microsoft and Apple Corp) and influencing popular culture through films such as the *The Matrix* (1999), especially in its concern with the 'source'. Particularly with the rise of the Internet, which was itself a product of the same liberal and libertarian values which drive the free software movement, free software and now also open source have gone on to provide a stimulus to the creativity and productivity of the entire software industry and have contributed to the emergence of new companies (such as Amazon, eBay and PayPal) and new forms of distributed creativity (manifested in projects such as Linux, Apache and Creative Commons and elements within the latest Web 2.0¹³ craze).

Free/libre and open source software (FLOSS) has gradually infiltrated the deployment of software in the corporate sector (typically understood as infrastructure projects) and is now influencing the commercial off-the-shelf market (such as Microsoft Office). Some companies now energetically expound the new 'open source' mentality as a business opportunity that gives them a competitive edge over their rivals. Amazon, for example, has been a keen advocate of FLOSS and claimed a \$17 million saving in licensing and labour costs for the first quarter of 2005 (Wheeler 2005: 18). As FLOSS has demonstrated its ability to provide extremely efficient and reliable solutions to complex computer needs, the term 'open source' has become popularised as a cultural term associated with freedom, progress, effectiveness and productivity. Indeed, corporations have been busy appropriating and promoting their 'open source' credentials, most memorably with Steve Jobs proclaiming that Apple Computer represented open source 'for the rest of us' (Cringely 1999) even as they were