CHAPTER 4

From the Commons to Capital:
Red Hat, Inc. and the Incorporation of
Free Software

The previous chapter focused on Microsoft's long and complicated history with free and open source software and the attendant cultural practices of open collaboration associated with FLOSS communities.[24] Microsoft underwent a transformation in its stance toward open source software. What was originally an antagonistic stance eventually transformed into an embrace of open source processes and products. In part, this was driven by the growing acceptance of free and open source software as an effective, efficient model of industrial software production, but it was also driven by the emergence of commercially viable business models that were built around FLOSS communities. Perhaps the most significant of these emergent companies was Red Hat, Inc., which became the largest and only publicly traded company whose business model was built entirely around free software.

This chapter focuses specifically on how Red Hat built its business and how it negotiated its relationship with the community of free software developers upon which its business model depends. In effect, Red Hat transformed the commons of free software production into a capitalist enterprise by transforming FLOSS *products* into commodities that could be customised, sold, and serviced for its customers. I understand commodification simply as the transformation of use values into exchange values, which stems from Marx's analysis of the commodity form. However, some scholars like Meretz (2014) argue that free software is not a commodity and cannot be since this is prohibited by the GNU General Public License (GPL). Meretz's point is that the GPL promotes direct reciprocity between people because the licence stipulates that anyone using GPL-protected works must make their subsequent work available under the same licence. On this point, I agree with Meretz. However, as I will

demonstrate in this chapter, Red Hat transforms the use values of free software projects into exchange value through trademark law, thereby maintaining the reciprocity of its free software projects as stipulated by the GPL while simultaneously circumventing some of those provisions by embedding its trademark into customised free software packages. In effect, this contains the hallmarks of classic commodification (i.e. the transformation of use values into exchange values) while also some elements of knowledge rent extraction when Red Hat serves as the *de facto* 'owner' of the free software commons for the purpose of market exchange.

More than any other case study, this chapter illustrates the complex ways in which a FLOSS community and its software projects can be dialectically situated between the commons and capital. After all, there are processes of commodification taking place in this example, as will be demonstrated during a discussion of Red Hat's core commodities. However, there are certain unique characteristics of those software projects that allow their code to be commodified by Red Hat, while the community continues to have access to and a certain degree of 'ownership' of the code. This relationship is mediated through the specific intellectual property licences assigned to the code in question, which will also be explored in this chapter. This is particularly notable because Red Hat continues to enjoy a favourable reputation within free software communities, and it also found a way to commodify software without enclosing or dispossessing the commons from them. Rather, the relationship between Red Hat and the free software projects that it sponsors is negotiated through what O'Mahony and Bechky (2008) call 'boundary organisations'. Such organisations are created to negotiate and establish boundaries between two parties who may have both shared and disparate interests. On the one hand, FLOSS communities want to ensure the survival of their software projects and attract other developers to work on them, which can be achieved through securing corporate sponsorship of a project. However, the community also wants to preserve its creative autonomy by not ceding too much influence or power to the corporation. Negotiating these boundaries can effectively be achieved by establishing a boundary organisation, which serves as a forum for negotiating these interests while simultaneously serving as an intermediary between FLOSS communities and corporate sponsors.

To illustrate the specific dynamics at work in the relationship between Red Hat and free software communities, this chapter first explains the history of Red Hat as well as how the company developed a way to transform the digital commons of free software into a capitalist enterprise. The specific focus is on its core commodities – previously Red Hat Linux and now Red Hat Enterprise Linux, both of which rely on collaborative commons-based peer production from within the FLOSS community. Then, the chapter focuses on the ways in which Red Hat negotiates relationships with the FLOSS community through the boundary organisation of the Fedora Project Council as well as the Contributor Licensing Agreements (CLAs). These agreements protect Red Hat

against any claims to ownership by community members. Since the intellectual property rights of user contributions are centralised within Red Hat, the company then embeds its trademarked corporate logo into the distributions it sells, which gives it the ability to restrict access to and redistribution of its commodities. Finally, the chapter concludes with reflections about the Red Hat business model and what it means for the broader FLOSS community.

4.1. The Political Economy of Red Hat, Inc.

Red Hat Software, Inc. was founded in 1995 when open source software was still an emerging but rapidly growing phenomenon. In 1991, Linus Torvalds released the code for his Linux kernel project. At that time, the market for software and, more specifically, the market for operating systems was still dominated by large firms, most notably Microsoft and its Windows operating system as discussed in the previous chapter. In 1993, Bob Young formed a company, the ACC Corporation, which primarily sold Unix- and Linux-related accessories and books, and Mark Ewing created his own distribution of Linux, called Red Hat Linux, in 1994. One year later, Red Hat Software, Inc. (simply referred to as 'Red Hat' from here onwards) was founded after Bob Young's ACC Corporation merged with Mark Ewing's company. Red Hat was founded with the purpose of developing a commercially viable business model for open source by lending credibility to the emerging open source phenomenon. The creation of Red Hat was intended to bring the power of open source to businesses by providing packaged solutions to customers, while funnelling their earnings back into the open-source community by supporting free software projects. As Bob Young declared in 1999:

> We recognised the value of giving customers control of their software, and sought to bring brand reliability to the Linux product. We would offer support to customers and accelerate development of the operating system by investing our own R&D [research and development] dollars in new Linux technology that would then be given back for free to the community, for any Linux programmer or distributor to use. We had no intention of ever 'owning' the intellectual property we created. Instead, our business model was based on quickly expanding the market, and earning a small amount of revenue from a large number of customers who would buy a product that was better quality than that being offered by the industry leader, Microsoft. (Young and Rohm, 1999: 10)

The 'better quality' product that Young is referring to is the Linux-based operating system, which is created by open collaborative development, as opposed to closed proprietary development used by Microsoft. Red Hat found a way to offer an operating system that could be easily adapted to the unique needs of

different customers. This was particularly important in a time when hardware vendors were reliant on large, proprietary firms such as Microsoft to develop operating systems that could run on their hardware. The speed at which new versions of proprietary operating systems could be developed was much slower compared to the open source options. Consequently, Red Hat negotiated – and continues to rely on – strategic partnerships with hardware manufacturing companies, such as Intel, IBM, Dell, Cisco, Hewlett-Packard, Sony and others.

These partnerships are beneficial to Red Hat and its partners for several reasons. First, Red Hat can pursue its original goal of bringing commercial credibility to free and open source software by gaining the support of major information technology firms. Second, Red Hat positions itself as a leading company dealing solely in free software. Third, Red Hat supports free software projects financially to support the developer communities that work on these projects. In effect, Red Hat serves as an intermediary between large information technology firms and the FLOSS community.

However, in the early years of Red Hat, the company benefited from venture capital investment, particularly at a time when the 'dot-com' investment bubble was on the rise. Frank Batten, Jr., through Landmark Communication, was an early investor in Red Hat and committed $2 million to the company in 1997 (Young and Rohm, 1999). Landmark Communication was famous for investing in the Weather Channel, and the company remains a privately held investment firm that now operates under the name Landmark Media Enterprises. Red Hat also received investment capital from Greylock Limited Partnership and Benchmark Capital, a company based in Menlo Park, CA, and known for its investment in, and support of, the open-source community. All three of these entities – Landmark Communication, Greylock and Benchmark Capital – became major shareholders in Red Hat after its initial public offering (IPO).

Red Hat held its IPO in August 1999. The investment from venture capital firms, as well as the company's partnerships with major information technology companies, led to rapid growth in the firm's value. In September 1999, Red Hat's stock price rose to more than $122 per share, up from its original price of $14 per share. At the time, Frank Batten, Jr, owned 15 million shares in the company, while Greylock Limited Partnership owned 8.7 million shares, and Benchmark Capital owned 5.8 million shares (Kanellos, 2002). However, in the interest of giving back to the FLOSS community, the company tried to compile a list of all FLOSS developers who contributed to Linux and other FLOSS projects. While arriving at a fully comprehensive list was not possible, the company managed to develop a list of approximately 5,000 developers. The intention was to make these developers stockholders in the company so they could benefit from the company's growth. While the United States Securities and Exchange Commission regulations prevented a large portion of these developers from becoming investors,[25] more than 1,000 of the eligible 1,300 developers became early shareholders in the company (Young and Rohm, 1999). Making the effort

to include members of the FLOSS community as early shareholders in the company demonstrated Red Hat's commitment to supporting the community.

In the years following the IPO, Red Hat continued to enjoy growth in revenue. What is particularly striking about Red Hat's growth was that the company was not significantly affected by the dot-com bubble crash between 1999–2001. Rather, Red Hat emerged from this period and continued to grow. One reason for the company's steady growth during this period may be the strategic partnerships that Red Hat negotiated with large information technology firms in the lead up to the dot-com crash. Those firms – Intel, Cisco, IBM, Dell, etc. – also survived the crash and many have solidified their position as leaders in the market for information and communication technologies. Even though Red Hat was a start-up company, the partnerships that the company formed with these larger firms ensured that Red Hat would be supported by these businesses into the future.

While the company continued to enjoy growing revenues, its net profits exhibited a noticeable decrease during the dot-com bubble crash. Red Hat's profits dipped from 1998 until 2002, but rose again in 2003. This performance almost perfectly coincides with changes in management, and can also be explained by a shift in Red Hat's business strategy. In 1999, the original co-founders, Bob Young and Mark Ewing, left the company. In 2001, Paul Cormier joined Red Hat and began to lobby in favour of shifting the company's business model. Specifically, Cormier wanted to provide FLOSS solutions at the enterprise level rather than in the consumer market. To more fully explain the nuances of this shift, the following section contains an in-depth discussion of Red Hat's core products, how those commodities shifted focus over time, and how Red Hat centralised intellectual property within its corporate structure.

4.2. Red Hat's Core Commodities and Intellectual Property

Red Hat's business model relies primarily on its ability to provide an easy-to-use and accessible version of Linux by producing packaged distributions of the operating system, while also providing services and customer support that cater to its products. Red Hat's revenue comes from these two streams. The majority of Red Hat's revenue is derived from a subscription-based model, whereby clients get both products and support from Red Hat, in exchange for a fee. The types of products and services provided depend on the level of subscription. The effectiveness of this subscription model is based, to a large degree, on two interrelated factors: Red Hat's recognition as a trustworthy provider of FLOSS products and services, as well as Red Hat's position as a legally-recognised institution, which can be held liable for the products and services it provides.[26]

Most importantly for its customers, Red Hat provides a way to outsource services that may otherwise be too expensive to perform within a company. Indeed, any one of Red Hat's customers could perform the work done by Red

Hat, especially because the underlying code on which Red Hat relies is free software. Red Hat does not own the intellectual property rights for the free software that its services are based upon, and the company is not necessarily trying to exclude others from this intellectual property. Rather, Red Hat has built its business model on free software that is protected by the GNU General Public License (GPL), as well as other FLOSS licences. As such, any of its customers could, in theory, produce the same software that is sold by Red Hat, but they would need to perform the work themselves. However, Red Hat is liable for the products and services it supplies, which reduces the risk of in-house software development. This means that its customers can presumably be reassured that support will be available when they sign a contract with Red Hat. In effect, this is how Red Hat has become the market leader providing FLOSS distributions and services to earn revenues. Prior to Red Hat's founding, FLOSS projects had differing degrees of trustworthiness. By forming a corporate entity that could be held liable for the products and services it provided, Red Hat provided a certain degree of legitimacy to a system of production that was massively distributed and not necessarily driven by market forces. Such a system engendered projects that varied in their attractiveness to developers, which threatened the ability of certain projects to survive.

In what follows, I explain exactly how Red Hat has been able to profit from free software. I begin with a discussion of Red Hat Linux, which was the original operating system sold to customers from 1994–2004. Then, the company shifted its strategy to focus more on providing business solutions with Red Hat Enterprise Linux. Most importantly, I address the relationship between Red Hat's core commodities and the Fedora Project, which is one of the major FLOSS projects supported by Red Hat.

4.2.1. Red Hat Linux

When Red Hat first began offering products and services in the early 1990s, it sold a compact disc (for approximately $50) that contained a Linux distribution called Red Hat Linux, some additional applications and documentation. Red Hat Linux was based purely on computer code that was protected by the GPL and other FLOSS licences – that is, code that must remain freely available for distribution, modification, adaptation, etc. Red Hat Linux provided the principal source of revenue for Red Hat during its early years. Revenue came primarily from sales of Red Hat Linux to distributors and original equipment manufacturers (OEMs) for inclusion on their hardware. These companies are some of those which invested directly in Red Hat during its early years: Dell, Cisco, Hewlett-Packard, IBM and Intel. Because Red Hat had a potentially very large and distributed labour force to draw on – namely, the FLOSS community – its business model was highly scalable. That is, Red Hat had the ability to quickly expand its market share to service many customers without

incurring increased investment costs. This was precisely Red Hat's strategy: to rapidly increase the market, deriving a small amount of revenue from many transactions, while reinvesting part of its earnings back into the FLOSS community.

While Red Hat Linux constituted the primary commodity for Red Hat during its early years, the bulk of its work was coming from the support it provided for this software. Red Hat's employees provided customer support, education, training and technical support to its clients. This strategy, along with Red Hat's strategic partnerships, allowed the company to pick up market share during its early years. While the company's revenues were still growing up until 2004, it had not yet become a profitable business. This was in part due to a spate of acquisitions of other software firms before the dot-com bubble crash, but also because the company had not yet found a way to substantially increase subscription sales at the enterprise level. This is precisely the change that occurred when the company shifted its focus to Red Hat Enterprise Linux, which became its core commodity and continues to be today. The final stable version of Red Hat Linux was released in 2003, which was the same year that Red Hat Enterprise Linux was released.

4.2.2. Red Hat Enterprise Linux and the Fedora Project

In 2003, Red Hat split its Red Hat Linux project into two separate projects: Red Hat Enterprise Linux and the Fedora Project. Red Hat Enterprise Linux continued as a core commodity for Red Hat in the same way that Red Hat Linux had been before. The Fedora project, however, became a community-based FLOSS project. Red Hat Enterprise Linux relied on the same model as Red Hat Linux in terms of providing packaged distributions of a free operating system but, rather than selling individual compact discs containing the software, Red Hat Enterprise Linux was made available solely through a subscription model. Depending on the level of subscription, customers could get access to customised versions of the Red Hat Enterprise Linux operating system, plus different levels of support services for it. In effect, Red Hat Enterprise Linux was a similar product to Red Hat Linux with a different customer distribution model. Red Hat then used the revenues from sales of Red Hat Enterprise Linux to support the Fedora Project. The relationship between these two projects provides perhaps the most interesting insight into how Red Hat incorporates the commons.

The split into Red Hat Enterprise Linux and the Fedora Project in 2003 was made with the intention of finding a mutually beneficial way for the FLOSS community and Red Hat to collaborate on developing software. Red Hat Enterprise Linux continues to serve as one of Red Hat's core commodities, and the company profits from subscription sales to its customers. The Fedora Project was meant to be a community-sponsored project that would provide an incubator for innovation. In return, the innovation that occurred within the Fedora

Project could then be implemented into Red Hat's commercial offerings, which could be customised to its clients' needs. This was possible because of the ownership and governance structure of the Fedora Project, as well as the worker contracts established with contributors to the project.

4.2.3. Ownership, Governance and Intellectual Property in Fedora

Red Hat, Inc. exercises ultimate control of the Fedora Project. However, the Fedora Project Council leads the Fedora Project.[27] The Council, in effect, functions as a boundary organisation for negotiating the boundaries between Red Hat and the Fedora project. However, a detailed examination of the Council is instructive for illuminating the ways in which these relationships are structured. The Fedora Project Council is comprised of six members with full voting powers: two members appointed by the community for engineering and outreach, two members elected by the community, and two members who are employees of Red Hat and are appointed by the company. The Council may also have two to four additional community members at any given time who are appointed to take the lead on specific project objectives. These members are considered auxiliary Council members with binding votes only in the areas specified by their appointment. In addition, the Council also has two additional auxiliary seats: the Diversity Advisor, who is appointed by the Council, and the Fedora Program Manager, who is appointed by Red Hat with the approval of the Council.

While the governance structure of the Fedora Project has changed over time, perhaps the most interesting factors in this structure pertain to the members appointed by Red Hat: the Fedora Project Leader and the Fedora Community Action and Impact Coordinator. The Fedora Project Leader serves as Chair of the Council, while the Action and Impact Coordinator is responsible for coordinating decision making with budgetary concerns. Previously, the Project Leader was also given veto power over any decision made by the Fedora Project Board, but now all voting members can block decisions 'with a valid reason' (The Fedora Project, 2019). However, the Project Leader does have 'a limited power to 'unstick' things if consensus genuinely can't be reached and a decision needs to be made' (The Fedora Project, 2019). The language used here is vague, but it does suggest that the Fedora Project Leader may still maintain ultimate control over the project, although he or she would presumably expend considerable political capital in making decisions that conflicted with the interests of the community.

Red Hat supports the community by sponsoring the project and directing funds to Fedora through one of its appointed employees, but it then uses the work performed by the community in its commercial offering, Red Hat Enterprise Linux. The reason Red Hat can appropriate the labour performed within

the community is because all contributors to the Fedora Project have signed a contributor's agreement. These agreements have changed throughout the history of the Fedora Project, but all have similar effects. Originally, contributors needed to sign the Individual Contributor Licensing Agreement (ICLA), which effectively assigned the contributors' copyright to the Fedora Project.[28] However, the ICLA was later abandoned in favour of the Fedora Project Contributor Agreement (FPCA), which no longer assigned copyright to Red Hat, but specified the types of licences that could be included in the Fedora Project.[29] This shift made it possible for code that had already been licensed under a previous licensing scheme to be included in the Fedora Project, as long as the licences were compatible with the guidelines established by Fedora.

Both the ICLA and the FPCA provide the mechanism that allows Red Hat to commercially exploit the labour that occurs within the commons-based peer production of free software projects. In this sense, the agreements allow Red Hat to incorporate these projects into its corporate offerings by having the right to use these projects transferred to the company. In the case of the ICLA, it provided a direct assignment of a contributor's copyright to Red Hat, whereas the FPCA does not necessarily assign copyright to Red Hat. In this sense, the FPCA can be viewed as less restrictive because it allows contributors to assign licenses to their work prior to submitting the work to the Fedora Project. However, those licences must be compatible with the goals of the Fedora Project, and the Fedora Project wiki maintains a Software License List that identifies the acceptable and unacceptable licences that can and cannot be included in Fedora.[30] Importantly, Red Hat does this because it becomes legally responsible for the products that it offers to customers. If content other than code is included in the submission (text, images, logos, etc.), the contributor must waive his or her moral rights to the content. This ensures that Red Hat will not be subject to infringement claims. In effect, these licensing agreements provide a way for Red Hat to control what is included in the commons-based project (Fedora) so that when that material is included in their commercial offering (Red Hat Enterprise Linux or other software), the company will not be subject to intellectual property infringement claims by the contributors.

By taking these preventative measures to control what is included in Fedora, Red Hat can provide its customers with a guarantee that they will not need to fear a potential claim against intellectual property infringement. Red Hat does this through its Open Source Assurance Program. As the Open Source Assurance Agreement[31] contract states, if a third party alleges infringement of intellectual property in the software provided to the client by Red Hat, the company will:

> (i) defend Client against the Claim and (ii) pay costs, damages and/ or attorney's fees that are included in a final judgement against Client (without right of appeal) or in a settlement approved by Red Hat that

are attributable to Client's use of the Covered Software; (Red Hat, Inc., 2016)

Furthermore, if the Client's use of Red Hat's software is found to infringe the third party's intellectual property rights, then Red Hat will:

(i) obtain the rights necessary for Client to continue to use the Covered Software consistent with the Support Agreement(s); (ii) modify the Covered Software so that it is non-infringing; or (iii) replace the infringing portion of the Covered Software with non-infringing code of similar functionality (subsections (i), (ii) and (iii) are the 'IP Resolutions'); provided that if none of the IP Resolutions is available on a basis that Red Hat finds commercially reasonable, then Red Hat may terminate the Support Agreement(s) without further liability under this paragraph, and, if Client then returns the Covered Software that is subject to the Claim, Red Hat will refund any prepaid subscription fees related to Covered Software. (Red Hat, Inc., 2016)

From Red Hat's perspective, then, this is the legal-juridical benefit of controlling what is included in the Fedora Project, as well as centralising control of the intellectual property rights within its corporate structure. Red Hat relies on the FLOSS community to perform the cooperative labour of developing new features, fixing bugs or otherwise improving the Fedora Project so that these features can be included in its commercial offerings. To assure its customers that they will not be subject to intellectual property infringement claims from third parties, Red Hat requires contributors to assign licences to their work that will allow Red Hat to continue providing its services. In effect, Red Hat is separating authorship from ownership, which is one of the primary critiques of intellectual property laws (see Bettig, 1992). However, Red Hat does not use copyright to prevent authors or anyone else from using the code in other ways. Rather, Red Hat is trying to ensure that the rights to use the code in Fedora have been legally transferred to the company, which allows the company to provide assurances to its customers. Red Hat's method for protecting its core intellectual property does not come from copyright, but the company still prevents exact redistributions of its property through trademark law.

4.2.4. Red Hat, Trademark and CentOS

As stated earlier, Red Hat does not own the intellectual property that makes up its core commodities. Most of the code in these core commodities is covered by the GPL, which allows others to freely copy, modify and redistribute it. Therefore, rather than relying on copyright to protect its core commodities,

Red Hat relies on trademark law to protect its properties. The details of this strategy can be found in the Red Hat Trademark Guidelines[32] document (Red Hat, Inc., 2006). Hypothetically, anyone could make an exact copy of Red Hat's open source software and begin selling it, but they would be prevented from including any registered trademarks. These trademarks include the logos and names of software, which means that exact copies of Red Hat's open source software would need to be given a different name. Red Hat's trademarks also prevent products from having names that are sufficiently similar, like 'Green Hat' or 'Red Cap' or 'Redd Hatte'. While these restrictions exist, CentOS provides an example of a project that served as an exact replacement for Red Hat Enterprise Linux.

CentOS began in 2004, and served as a functionally compatible version of Red Hat Enterprise Linux. Indeed, CentOS was based on the publicly available code for Red Hat Enterprise Linux. Rather than competing with CentOS or trying to prevent them from using code included in Red Hat Enterprise Linux, Red Hat was largely ambivalent about CentOS. This was, in part, due to the perception that customers who wanted to use CentOS would probably continue to use it, but also because those customers could switch to Red Hat Enterprise Linux at any time because the two operating systems were basically the same. However, whatever tension may have existed between the two operating systems became a moot point in 2014, when Red Hat officially became a sponsor of the CentOS project. The move was perceived as a way to meet users' demands across the three major versions of Red Hat's software – Red Hat Enterprise Linux, Fedora and CentOS – by giving users access to features that may not be included across all versions of the operating system (Vaughan-Nichols, 2014). As part of Red Hat's new sponsorship of the CentOS project, all CentOS trademarks were transferred to Red Hat.

Red Hat's use of trademark law to protect its market position is deployed in conjunction with its ability to control the intellectual property included in its commercial offerings. By sponsoring the CentOS project, Red Hat can increase its intellectual property holdings, while also eliminating a rival form of free software that was offering a functional equivalent of its commercial software. In this sense, Red Hat's sponsorship of the CentOS project functions similarly to a corporate acquisition or an instance of horizontal integration.

4.2.5. Core Commodity Conclusions

Red Hat, as an institution, may be viewed in at least two different ways. On the one hand, Red Hat can be viewed as a pragmatic way to centralise commons-based peer production within capitalism. In this way, Red Hat serves as an intermediary institution for providing commercial access to commons-based peer production. In other words, Red Hat is situated between capital and the commons. Importantly, however, Red Hat is clear about its intentions

and involvement in FLOSS projects, and it is one of the largest contributors to other FLOSS projects; furthermore, the company is actively paying its employees to contribute to other FLOSS projects. For these reasons, Red Hat maintains a relatively good relationship with its FLOSS communities. Indeed, Red Hat's entire business model was founded on finding a way to bring the power of FLOSS production to other businesses. In return, Red Hat reinvests in the FLOSS community by supporting FLOSS projects, acquiring new businesses and then releasing source code to the community. The relationship between Red Hat and the FLOSS community is one of mutual benefit: Red Hat's financial success benefits the FLOSS community, more revenue for Red Hat means more investment in FLOSS projects, and more investment in FLOSS projects means higher quality products and services that Red Hat can offer to its customers.

On the other hand, Red Hat can also be viewed as an institution that operates no differently to other corporations within a market-driven capitalist economy. Red Hat relies on centralising production within its corporate structure, separating authorship from ownership through worker agreements, and protecting intellectual property through trademark laws for making a profit. The difference is that Red Hat cannot prevent some actions that are commonly copyright violations because of the rights granted by free software projects. In this sense, Meretz (2014) or others who claim that free software cannot be a commodity because this is prevented by the GPL are correct, but the Red Hat case study illustrates how a company can circumvent traditional copyright law and rely on other forms of intellectual property like trademarks to become the *de facto* 'owner' of the free software commons for the purpose of market exchange. The term 'owner' is placed in quotes here because Red Hat of course is not the actual 'owner' of the commons in the traditional sense of property. However, its embedding of its trademark does allow Red Hat to, in effect, extract knowledge rent from selling customised versions of free software to its customers.

Furthermore, Red Hat does not directly employ its entire labour force, which exempts the company from directly compensating all its labourers through wages and benefits. Aside from those members of the Fedora Council that it directly employs, it relies on other informal ways of compensating those programmers who contribute to Fedora. So there is a mix of both waged and unwaged labour occurring in the production of Red Hat and the Fedora Project. In other terms, there is someting of the formal subsumption of labour (i.e. introduction of waged labour into FLOSS production), but there is also a broader point to be made about the real subsumption of labour here, because the survival of the Fedora Project is in part based upon its dependence on Red Hat. However, Red Hat relies on the development of an active Fedora community, and it is in the company's best interest to maintain a good relationship with that community. If the company were to exercise unwanted influence in the Fedora Project, those who contribute to the project may choose to abandon the project, thus ceasing development of new and innovative features that

could potentially be included in Red Hat Enterprise Linux. Indeed, the following chapter illustrates what can happen when such a relationship breaks down.

4.3. From the Commons to Capital

In weighing these two interpretations, at the very least, Red Hat provides an exemplary case for understanding how the boundaries of a firm can become blurred as it orients itself toward commons-based peer production. In this sense, Red Hat demonstrates the ambiguity of commons, particularly as it pertains to the potential for radical change. Furthermore, Red Hat demonstrates how a distributed system of commons-based peer production can be centralised or incorporated into a corporation's broader strategy and turned into a profitable business. As demonstrated throughout this chapter, Red Hat accomplished this through both formal and informal mechanisms.

Red Hat was one of the earliest companies to position itself as the leading company providing services for FLOSS. As such, Red Hat sought to lend an element of professionalism to the emerging FLOSS phenomenon by establishing the formally recognised institution of a publicly traded corporation that could be legally liable for the services provided. Consequently, Red Hat needed a formalised way to control the commons-based peer production that it incorporated into its core commodities. The company accomplished this through the Individual Contributor License Agreement (ICLA) and later the Fedora Contributor License Agreement (FCLA) that granted the company rights to use the production that was performed by developers.

The contributor licensing agreements constitute a formal mechanism for controlling the informal production that takes place in commons-based peer production. These agreements are essential to Red Hat's business model because they allow Red Hat to be legally liable for the products it sells, particularly when it comes to allegations of intellectual property infringement. Red Hat is certainly not alone in using these types of agreements. The issuing of contributor licensing agreements is common practice in FLOSS projects, although the terms of the agreements may differ from organisation to organisation. Some CLAs, like the ICLA formerly used by Red Hat, represent the most striking examples of how institutions, whether for-profit or non-profit corporations, or any other type of legally recognisable organisation, formally control commons-based peer production by separating authorship from ownership. However, other CLAs like the FPCA now used by Red Hat do not require full copyright transfer. Nonetheless, CLAs in general provide a mechanism for transferring rights from commons-based peer production to commercial firms like Red Hat.

While this may be viewed as a pragmatic solution for monetising FLOSS production and products, it also illustrates the limits of Benkler's claim that the boundaries of the firm will become porous. Indeed, despite the seemingly

revolutionary potential of this new modality of production, it still maintains the hallmarks of capitalist production: centralisation, control, and appropriation of surplus value. Insofar as one claims FLOSS production to be exemplary of commons-based peer production or 'non-market production', the labour performed under these conditions can still be appropriated for corporate gain. In the case of Red Hat, the company has been able to benefit from the creative input of the FLOSS community contributing to the Fedora Project. However, in the same way that Red Hat relies on both formal and informal degrees of controlling production within the Fedora Project, the company similarly relies on both formal and informal mechanisms for compensating those who contribute to its FLOSS projects.

Red Hat provides direct compensation to those members of the Fedora Council who are employed by and appointed to the Council by the company. Red Hat also directs funding back to the Fedora Project through the Open Source and Standards group, which provides funding for one of the full-time employees who serves on the Fedora Council. For those contributors who are not directly employed or paid by Red Hat, their compensation comes to them informally. Typically, community members do not have access to the budgetary funding provided by Red Hat, although community members may be elected or appointed to the Council, in which case they will at least have a say in how funds are directed. Aside from this, they may also attend public events or trade shows where institutions like Red Hat provide sponsorship or other goods and services for the community. However, this informal economy is only sustainable for as long as the institutions supporting FLOSS projects remain transparent about their intentions for the products of FLOSS developers' labour and continue to support the community through the provision of paid employment, sponsorship of additional FLOSS projects and events, and informally through gifts given to the community.

In sum, Red Hat complicates binary distinctions between market-driven production and commons-based peer production by illustrating the way that one firm has been able to implement a hybridised model of commons-based market production. Furthermore, the case study of Red Hat illuminates the contours of the ways in which the boundaries of a firm can become more porous, as was claimed by Benkler (2006). However, those boundaries are still discernible, and the production within Red Hat's corporate structure is still largely market-driven. But Red Hat, through its sponsorship of, and relationship with the Fedora Project, has found a way to move somewhat informal production from the commons to capital.

4.4. The Future of Red Hat

The preceding discussion offered a description of the way that Red Hat was able to harness free software production and transform it into a profitable business. Red Hat's attempts to include free software developers in its original IPO, as

well as its ongoing contributions to FLOSS communities, earned the company a favourable reputation within programmer communities. Red Hat's ability to preserve this good reputation will be dependent, in part, on maintaining a good relationship with the Fedora Project community and not attempting to exert unwanted influence in the community.

The need for preserving this relationship has become even more urgent because Red Hat has been acquired by IBM (Red Hat, 2018). This news was announced shortly before this manuscript was submitted to the publisher. While it is still too early to tell the consequences of the acquisition, especially for the Fedora Project, I wanted to add a coda to this chapter to address the acquisition. While any prognostications for what will become of Fedora are purely speculative, there are certain factors that suggest the Fedora Project is likely to survive, even if the institutional arrangements between Fedora and IBM are altered slightly from the institutional arrangements between Fedora and Red Hat. First, and perhaps most significant, is the fact that IBM has also been supporting various FLOSS projects throughout its history, and the company is likely to respect the boundaries of the Fedora Project and its creative autonomy. Second, we have already seen examples of what can happen when a company exerts unwanted influence over FLOSS projects, which is precisely the subject of the following chapter. In that case, Oracle acquired Sun Microsystems, which had been supporting various FLOSS projects. After Oracle interfered in those projects, the communities abandoned them, leaving Oracle without any developers working on the projects. This is one of the risks that IBM will take if it decides to meddle in the Fedora Project in the wake of its acquisition of Red Hat.

Notes

[24] An earlier version of this chapter appeared as Benjamin Birkinbine, 2017. From the Commons to Capital: Red Hat, Inc. and the Business of Free Software. *Journal of Peer Production* 10. Accessed 2 January 2019. http://peerproduction.net/issues/issue-10-peer-production-and-work/from-the-commons-to-capital/

[25] Two regulations are most significant here. First, you must be a US-based taxpayer to buy IPO shares for a company listed on an American exchange. This regulation eliminated approximately half of the eligible investors. Second, since the SEC designates IPO offers as extremely high-risk investments, it regulates against 'inexperienced investors' buying shares in IPOs. This regulation eliminated another 15% of developers, as they were either students or qualified as 'inexperienced investors' according to SEC guidelines.

[26] Unless otherwise noted, the information in this section comes from Annual Reports (Form 10-K, Red Hat 2000–2018) filed with the Securities and Exchange Commission in the United States between the years 2000–2018.

27   Information about the Fedora Project Council is publicly available on the project's wiki, which is available at: http://fedoraproject.org/wiki/Council (last accessed on 2 January 2019).

28   Information about the Individual Contributor Licensing Agreement can be found on the project's wiki at: http://fedoraproject.org/wiki/Legal:Licenses/ CLA (accessed on 2 January 2019).

29   Information about the Fedora Project Contributor Agreement can be found on the project's wiki (Fedora Project 2019) at: http://fedoraproject.org/wiki/ Legal:Fedora_Project_Contributor_Agreement (accessed on 2 January 2019).

30   The Software License List can be found at: http://fedoraproject.org/wiki/ Licensing:Main?%20rd=Licensing#Software_License_List (accessed on 2 January 2019).

31   The full text of the Open Source Assurance Agreement can be found at: http://www.redhat.com/legal/open_source_assurance_agreement.html (accessed on 2 January 2019).

32   The Red Hat Trademark Guidelines (Red Hat 2006) are available at: http:// www.redhat.com/f/pdf/corp/RH-3573_284204_TM_Gd.pdf (accessed on 2 January 2019).