

# Free Software Model in other Areas of Economy<sup>(\*)</sup>

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***Abstract.** This paper aims at showing that the Free Open Source Software (FOSS) model is suitable not only to make good software. It might also work in other economic areas. Making a parallel with the collective FOSS property, the possibility and viability of a collective ownership over the knowledge of production is analysed. The ideas here presented were born and developed in a FOSS community (Libervis) and written in its Wiki section.*

## 1. Introduction

The FOSS model has brought several benefits to developers and users: Why could not the same happen in other economic areas? That model could, for instance, help avoid monopolies and consumers' locking, promote free competition, enhance technological progress, provide more business opportunities and choices to consumers. We examine, first, the private ownership of the means of production, and some consequences to society, relating them with copyright and patent issues. The software area is examined, and successful features of the FOSS model are identified; the main differences between knowledge and material productions are analysed. We identify knowledge of production as what could be shared by a community of organisations, and examine conditions that could turn open organisations capable to self sustain in an economic sector. A kind of GPL-like license is proposed to be one of them. At last, we analyse its viability, discussing some open issues, and showing its possible (good) effects to society.

## 2. Theoretical Framework

We experience nowadays a serious civilisation crisis which has an economic basis but goes beyond. It is a crisis of values, culture and project. Society shows itself incapable of solving old and new problems, such as peace, security, hunger, poverty, terrorism etc.

Among other reasons, we can identify the private ownership of the means of production as being in the root of the ill-functioning of society. Based on Marx's ideas, Mouzelis (1990) proposes a useful conceptual tool to examine the 'Production Sphere' of human activities (economic, political, religious, etc). Any area of activity is analysed through three levels of concepts: (a) 'the means of production'; (b) 'the specific form of appropriation/control' over the means; (c) 'the justification/legitimation' of the specific form of appropriation. In the economic sphere the three levels can be described as follow: (1) The 'means of production' are tools, machinery, factory buildings, knowledge of production, blueprints, etc. In the digital age, software are also part of these means; (2)

The 'current form of ownership' is the private ownership of the means of production; (3) The 'justification/ legitimisation' of the private property: liberal ideologies generally, which are used to justify and legitimate the private ownership over the production.

This distinction regards the level of justification as relatively separated from the productive system itself. There are many ways to justify a form of ownership, and these attempts often try to distort reality to hide 'privileges' which an ownership may bring up. In the economic sphere, the private ownership assures the privilege of those who own the means of production. As capitalists own a factory or a company, they use employees to work for them. It may be not so clear to regard it as a privilege in small companies. Owners and employees may sometimes work so closely together (and in a friendly way) that the privilege may not be so important. But it becomes apparent in big companies: their owners are able, for instance, to dismiss plenty of employees in one second. The privilege is also related to the control over the products of the work realised by the employees. A capitalist takes over a part of their work and gives a wage as an exchange, and have the right to decide whatever the capitalist wants over the means of production, profits and capital accumulated. This is granted by law, and liberal ideologies try to justify and mainly distort reality to convince people that it is legitimate, natural, etc.

There are many ideological discourses [Mises 2000], but here we examine only one: ***free competition is (or should be) a central feature of a healthy capitalism***. Its arguments, however, disguise the fact that competition is not the main goal of most companies under the current rules, and that big companies almost always try to close competition and make monopolies or oligopolies. There is a enormous distance between what is discursively stated (ideology) and what is actually done by most companies.

Some brief consequences are: (a) huge concentration of capital which gives rise to oligopolies of giant multinational corporations, sometimes more powerful than many countries; (b) enormous concentration of scientific and technological knowledge; (c) international division between few rich technologically advanced countries and many poor underdeveloped countries, with several economic, political and social problems. The automobile industry sector is a clear example: few automobile companies, such as Ford and GM, exploit not only their direct employees (now are very few), but foremost the uncountable medium and small firms, the huge car spare industry, which sell car pieces for the big companies and are at the same time exploited by them. And this goes beyond a single country in that poor countries, with cheaper workers, are also exploited in an evil international chain of capital and technology concentration.

Two forms of intellectual property -- patent and copyright -- are very influenced by the current form of the private ownership, and also result in many social problems. This is very clear in the drug industry of cure for AIDS. There are 25 million people with the AIDS virus in sub-Saharan Africa; 17 million have already died. There is no cure known for AIDS, but there are drugs to slow its progression that are still experimental, but that increase patients' life expectancy by 10 or 20 years. They are expensive and today some cost \$25,000 per year. At these prices, "no African nation can afford the drugs for the vast majority of its population: \$15,000 is thirty times the per capita gross national product of Zimbabwe" [Lessig 2004, p265]. As Lessig explains, "These prices are not high because the ingredients of the drugs are expensive. These prices are high because the drugs are protected by patents. The drug companies that produced these life-saving mixes enjoy at least a twenty-year monopoly for their inventions. They use that monopoly power to extract the most they can from the market. That power is in turn used to keep the prices high" [2004, p266].

Though patents were invented to stimulate R&D investments and technological advance, now are used to hide excused economic intentions. Very few drug patents are really innovative (the same with software patents), and are only used to keep cheaper generic drugs off the market (monopolistic behavior), promoting price-fixing (oligopolistic behavior) and even low ethical behaviors, like paying bonuses to doctors who prescribe the most expensive medicines. Drug companies affirm that the main reason medicines have such high prices is because it costs them about \$500 million to make a drug and sell it, but this figure is exaggerated. Recent studies have found out that the actual number is closer to \$100 million [Public Citizen 2001]. Nowadays, what actually patents do is to restrict public access to scientific knowledge, specially through cross-licensing, and *to retard technological progress*. If those medicine knowledge were not patented in the way they are, there would be genuine cooperation, genuine competition, tremendous innovation, and maybe 15 to 30 million lives saved in Africa.

The copyright issue is also related to the private property over production. Scott (2001) reviews the history and application of copyright and concludes that, although it is promoted as being in the interests of authors, its law has been used to establish positions of monopoly exploitation, particularly by multinational monopoly cartels. A clear example is in the CD music industry. Usually, the author of a music CD recover about 10% or less of the sale price of the CD, with the balance of the sale price going to the retailer, the record label, producers, marketers, designers, the distributors of the CD and a host of others, often subsidiaries of a vertically integrated conglomerate. Profit from each of these steps is really profit of the conglomerate.

To conclude, the two most important consequences of the current specific form of the private ownership over the production are highlighted here: (a) Under the current capitalist rules, *competition is not really free*. The actual space for free competition is indeed small in most areas of economy; (b) Companies earn their money from the *ownership* over the means of production, especially *over the knowledge of production*, not from the work really accomplished to produce goods and services.

### **3. The Software Production Area**

There are basically two models of software production: proprietary and FOSS. The proprietary model is based on the idea that the software created is attached to a particular individual or company: the owner of the software. It does not matter whether the owner was the original creator, only the current owner has the right to decide who, when, and under what terms someone can use, copy, modify and distribute the software.

Source code is mostly held secret, and sold, licensed, or even shared, under non-disclosure agreement. Copyright and patent laws are used to “protect” technological creations against anyone who did not participate in the innovation. Most proprietary software companies fight each other for profit and domination in a traditional way; a wild competition which takes place in the very process of software innovation. As a consequence, software are tightly tied to the company that produces it. Any changes, patches or upgrades are done exclusively by the proprietary company. Users depend on the company, are unable to improve its software and change it to suit their needs.

Conversely, the FOSS model is based on the idea that the owner of the software is the cooperative community of developers and users, which is voluntary and has rights and duties, that encompass users' four freedoms [GNU/FSF website, Barr 2005]:

(0) The freedom to run the program, for any purpose;

- (1) The freedom to study how the program works, and adapt it to your needs;
- (2) The freedom to redistribute copies, so you can help your neighbor;
- (3) The freedom to improve the program, and release improvements to the public, so that the whole community benefits;

Software is regarded as a kind of information that belongs to everyone, who can use this information and contribute in developing it in a free way, but cannot privately appropriate and individually own it. Software is turned into a collective means of production to develop more software. The key feature of FOSS licenses (like the GPL) is that they keep free new software, derived from previous ones. Everyone is free to distribute software, but only if they distribute it under the same free licenses. Copyright is used to free software; and patents do not play any role, except as an outside threat.

Through FOSS licenses which assure the 4 freedoms, the software production becomes *intrinsically* cooperative and community driven: the entire FOSS community may participate in developing free software, reporting bugs, deciding about new features, writing documentation, translating user interfaces, etc. It is not surprising that the FOSS community is a huge, strong and friendly one, based on sharing, cooperation, and maximizing reputation incentives [Raymond 2001, p85], not only on competition and race for money; a community unrivaled by any other proprietary platform. Richard Stallman's and Linus Torvalds' greatest genius was not merely in code, but mainly in creating that cooperative environment where many gifted coders could work together for the common good. Often, software are being developed out of passion for programming. There is a free software ideology behind the FOSS model, that is about giving freedom to developers and users of software, unlocking information and supporting free flow of knowledge. Thus, the protective feature of FOSS licenses adds a magic glue to the FOSS community, the good feeling that comes from doing good for others, and knowing that it will continue to do that good for as long as it is used. The GPL license, in particular, covers a whole lot more than just the Linux kernel. In the statistics, almost 36 thousands projects are covered by more than 50 different licenses, and 68% of those projects are licensed by the GPL [Freshmeat.net website].

The FOSS model brings up a new kind of business, which is based on selling material goods related to the free software, such as CDs, books, bundled material products; and services of distribution, subscriptions, and of support to customise free software to particular purchaser. Even proprietary companies, such as IBM and Sun Microsystems, are using this open strategy to make their business: not selling software, but just material goods -- computers in the case -- and providing together some sort of free software. It is basically in this way that FOSS companies are making their business.

This new business model, in turn, brings about several good consequences to the software production: (a) innovations are more user oriented to their actual needs; (b) generally, free software are quicker developed, and present more quality, security and reliability than proprietary ones; (c) cooperation and competition are both stimulated, promoting technological advance; and (d) users' locking and monopolies are avoid. The growing use of FOSS by companies, Governments and state institutions of several countries proves clearly the FOSS success [United Nation report 2003, May 2004, Lerner&Tirole 2004]. NASA, for instance, uses FOSS because of access to its source code -- their responsibility during launching people to space is too high to let some unknown code handle mission-critical tasks [Moran 2003].

At last, there is a clear advantage: the FOSS model promotes both cooperation and competition, which reinforce each other. Cooperation because it allows the entire world participate in fixing problems, in adding features, correcting bugs, etc. Competition because it allows competing companies to join together in investing a certain kind of software. For example, rivals, such as Red Hat, Mandrakesoft and Novell, invest in free software, such as the GNU Project, Mozilla Foundation, Apache, etc. The very fact that the software produced by them are free software, and source code is produced cooperatively and available to anyone, allow them to compete in providing services, combinations of free software, licenses of services, training, upgrades, etc. The FOSS lesson to be comprehended here is that because of this free open cooperative environment, competition is really free and open organisations can hardly become a monopoly. This suggests a promising solution to other areas of economy.

#### **4. The FOSS Model in other Areas of Economy**

The main difference between software and material good productions concerns their outcomes: software and material good. Software is a kind of information and immaterial in its essence, and hence extremely easy to copy, distribute and share. On the other side, material goods are not copyable at all, and are not hence so easy to share ultimately.

This difference leads to an important consequence: when material goods are sold a producer is alienated from the goods sold. Conversely, when software are “sold” a producer does not lose them. To show the possibility of expanding the FOSS model, we draw upon the following analytical division of the production of any economic areas:

- (1) The production of 'knowledge of production'. It is part of the means of production and mainly an outcome of R&D activities, and a part of that is already in public domain;
- (2) The production of 'material goods'. It uses the outcome of the previous production and is usually the end product that is sold to consumers (TVs, furniture, cars, etc);
- (3) The “production” of services. It may be regarded as the work of installing, fixing and maintenance of material and immaterial goods.

In the software area, however, the end product is not the result of (2), but of (1), since software are part of both the means and the outcome, of the software production, and of course are not material. Software are part of the means to produce more software. In the proprietary model, software are artificially regarded as a material good, and thereby as if were an outcome of the activity (2). The profit of selling copies of the end software endows the cost of the activity (1) [Soares 2004], whose outcome is kept secret and privately owned. On the contrary, free software are regarded as information and kept free through free licenses; software sources are open and produced cooperatively. In the FOSS business model, what pays the “cooperative R&D” to develop software is the selling of material goods and services, related to the free software.

In other areas of economy, concerning material goods, these are of course not shareable, as well are not shareable tools, machinery and other physical infra-structures. However, the knowledge of production is indeed shareable and, in a sense, very similar to software. That is the clue for expanding the FOSS model to other economic areas. In the traditional capitalist model, the knowledge of production is regarded in the same way as software in the proprietary model: the R&D outcome and knowledge of production in general are held secret, privately owned, and, in the specific case of material production, often protected against competitors through patents. So, knowledge

of production are mostly developed and owned privately, and their costs are endowed in the price of material goods, and may lead to consumers' locking, monopoly, etc.

Conversely, knowledge of production could be regarded in the same way as free software: any knowledge of production could be developed cooperatively and owned collectively. We may call it as the *Free Open Knowledge of Production (FOKP) model*, and think of a specific FOKP for each area of production, from TVs and cars, to furniture and houses. To clarify this idea, we now develop a complete parallel with the FOSS model to show how the FOKP model would work, hypothetically.

In the FOKP model, the knowledge of production of any economic area is developed in a voluntary FOKP community of developers, producers and consumers, which is a huge, strong and friendly community, based on sharing and cooperation, not only on competition and race for money. In this cooperative environment, many gifted developers work together for the common good. There is a free knowledge ideology behind this model, that is about giving freedom to developers, producers and consumers of material goods, unlocking information and supporting free flow of innovation.

There is a key feature in the FOKP model: its GPL-like licenses keep free every new knowledge of production developed, from previous ones. Everyone is free to distribute free knowledge, but only if they distribute it under the same free license, which secures the collective property of free knowledge of production, and assures the 4 freedoms to every developer, producer and consumer:

- (0) The freedom to use the knowledge of production, for any purpose;
- (1) The freedom to study the knowledge of production, and how the produced good should work, in order to adapt it to your needs;
- (2) The freedom to redistribute copies, so you can help your neighbor;
- (3) The freedom to improve the knowledge of production, and release improvements to the public, so that the whole community benefits;

Through FOKP licenses, the production of free knowledge becomes *intrinsically* cooperative and community driven: the entire FOKP community may participate in developing free knowledge of production, reporting problems of goods produced, deciding about new features that are needed in certain goods, writing documentation, translating consumers' needs, etc. In short, free knowledge are produced cooperatively by many people, and free licenses are what adds a magic glue to the FOKP community, the good feeling that comes from doing good for others, and knowing that it will continue to do that good for as long as it is used.

The model also leads to a new kind of business: the FOKP business model, which is based on selling only the material goods and services, but not the outcome of R&D activities, that is mainly developed cooperatively and owned collectively. Open organisations profit not from a private knowledge of production, but from the proper production of material goods and related services, that is, from the work actually realised to make them. Competition is then accomplished over the kinds, variety, combination and quality of the produced goods and services. Presumably, this new model has several consequences: (a) innovations are more consumer oriented to their actual needs; (b) generally, free knowledge of production are quicker developed, and the material goods produced using them present more quality than the proprietary ones;

(c) cooperation and competition are both widely stimulated, speeding technological advance; and (d) consumers' locking and monopolies are naturally avoid.

This vision is powerful and dreamful: it does seem to be feasible in some way or another. But we should be cautious as far the actual viability of the FOKP model.

## 5. Problems and Open Issues

There are at least three important conditions to turn the FOKP model viable practically:

(1) A protection to the free knowledge that avoids its private appropriation and any restrictions to its public access. Patents are what complicates the FOKP model. Some alternatives are: a) a GPL-like license; b) a Patent-Left license, similar to copy-left license; c) a creative common license. This is an open issue. In our viewpoint, the GPL license is the best base for a FOKP license; its rules should be a clear parallel with the GPL ones, ensuring the 4 freedoms over any knowledge of production, with an additional clear clause stating that “all knowledge and content licensed under the present license cannot be patented nor restricted in any similar way”;

(2) A critical mass of a community of developers, producers and consumers to turn self-sustaining FOKP businesses in any specific areas. The reason to make a FOKP business is attached to the actual gains that an open organisation would have out of sharing its knowledge of production, that is, having persistent and valuable feedback from the community, among many open companies, to improve both production and products. Otherwise, the current secrecy logic of the traditional business would still prevail.

(3) A rupture in the individualistic culture of constructing knowledge and making business. Most people are unaware of the benefits of cooperating more widely and making business from this open cooperation. The crucial shift is to realise that caring for the good of the whole society means better results for each one. In a sense, it is the opposite of Adam Smith's “invisible hands of the market”: the “visible hands of a cooperative community”. Not comprehending that makes many people blindly believe that if they only care about themselves, individual needs and profits, they would ultimately be better off. This crucial shift is being realised by the FOSS community: purely individualistic endeavors are replaced by open and cooperative initiatives that, while making business and profiting from this, care about benefits for entire society.

Who would embrace the FOKP model? The software area reveals some answers. Big companies, like Microsoft, will never adopt the FOSS business model. So will not most companies of any economic areas, especially big corporations. The FOKP model may be adopted by small and medium companies, at least partially, by non-profit and non-government organisations, and by co-operative organisations [Monserrat 2005]; in short, by all initiatives that envisage social inclusion [CECOP 2002, RBSES 2004].

## 6. Conclusion

Historically, the private property that granted capitalists' privilege in society was mainly related to the ownership over the *physical part* of the means of production, since their *abstract part* -- the knowledge of production -- evolved in slow pace relatively. Recently, however, for the technological revolution caused by computers, the privilege has been gradually dislocated to the private ownership over the knowledge of production, which is “protected” (actually restricted to public access) through some forms of intellectual property, such as copyright and patents.

We assumed the possibility that the private ownership of the physical part of the means of production might not be so harmful to society if the knowledge of production could be cooperatively developed and collectively owned, as we describe in the FOKP model, in a parallel with the FOSS model. In a sense, these models may be seen as both pro-capitalist and pro-socialist and, paradoxically, against both views. They might avoid bad consequences of capitalism, while keep its competition feature, smartly based on cooperation: this helps self interests and competition, that in turn promote cooperation, regarded as *coopetition* in Tapscott's words (2001, p. 20).

We showed that the FOKP model viability depends on: (a) adequate legal GPL-like license; (b) critical mass of a community of developers, producers and consumers; (c) cultural shift to a cooperative mentality. These are still open issues. We concluded that the FOKP model is not a pure matter of business, though this is crucial to turn it viable, but foremost of a social project to change the individualistic mentality, turning cooperation wider and really open, and competition freer and healthier. So, solutions are to be glimpsed, created, proposed and further experimented as a collective endeavor, such as Linux, Apache and all free software projects. Here we invite all interested people -- of each and every area of society -- to contribute cooperatively in developing and solving the open issues of expanding the FOSS model to other areas of economy.

(\*) *Incinerator, I-am-PK, Prosario\_2000, Redcone, James, Putnameco, Marcanth, Marcus, have also participated in the article.*

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