

Legal frontiers in the global dissemination of technology and knowledge: the significance of three case studies for economic development

Yi Shin TANG

Assistant chercheur à l'Université de Singapour

2^{ème} Prix pour chercheurs confirmés post doctorants avec publications

ystang@nyu.edu

Abstract

This article explores a few alternatives to the traditional economic theories regarding the problem of global dissemination of knowledge and technology to developing countries. In particular, it examines three cases in which the classical notion of intellectual property rights seems to have been used in favor of developing countries, both through its orthodox application and through more liberal views of such legal institution. The first case deals with the phenomenon of peer production through electronic networks; the second discusses the regulation of trademarks in the context of collective rights; and finally, the third case tackles the recent problem of the so-called "abandonwares" and its implications of economic and legal nature.

Key words

intellectual property, peer production, abandonware, collective rights

Résumé

Cet article explore certaines alternatives aux théories économiques classiques concernant le problème de la diffusion du savoir et de la technologie en direction des pays en développement. Il analyse en particulier trois situations dans lesquelles la notion classique de droits de propriété intellectuelle semble avoir été utilisée en faveur des pays en développement, à travers une application soit traditionnelle soit plus libérale de ces droits. L'article examine tout d'abord le phénomène du "travail collaboratif" (peer production) dans les réseaux électroniques; puis discute de la régulation des marques dans le contexte des droits collectifs; avant de traiter du récent problème dit du "abandonwares" (l'abandon de vieux logiciels) et de ses implications économiques et juridiques.

Mots-clés

propriété intellectuelle, travail collaboratif, « abandonware », droits collectifs

INTRODUCTION

This article explores a few alternatives to the traditional and economic theories regarding the problem of global dissemination of knowledge and technology to developing countries. In particular, it examines three particular cases in which the classical notion of intellectual property rights may be used in favor of developing countries, both through its orthodox application or through more liberal views of such legal institution.

As previously discussed by this author, the disparity of political interests between developed and developing countries may raise transaction costs for the conclusion of efficient international agreements in the particular market of technology transfers (Tang, 2008). It is true that a proper manipulation of negotiation strategies, such as relying on certain bilateral forms of cooperation together with the existing multilateral agreements, could substantially overcome such costs and lead to more effective institutional arrangements in the current global geography of technological development, particularly when regarding the influence of bilateral investment treaties (BITs) over the current WTO-TRIPS Agreement.

However, even within such an institutional arrangement, a substantial part of developing countries could still fail to overcome the technological gap with the highly industrialized countries by means of international technology transfers, despite the continuous efforts of nations in the last two decades for implementing the multilateral trade agreements crystallized in the form of the WTO and the TRIPS framework, together with the more than 4,000 BITs elsewhere.¹ Some authors also claim that it is the form of intellectual property rights (IPR) protection that is actually preventing higher flows of technology to developing countries: if current IPR were more flexible towards patents and industrial technologies, they say, technology transfers would be much more intense and regular among Northern and Southern countries (Bagwell et al., 1998).

In sum, while many scholars agree that certain levels of international IPR (“intellectual property rights”) protection may be fundamental for encouraging higher scales of technology inflows and knowledge dissemination across the globe, it still remains controversial in the literature what would be the best strategy to attain such

¹ In this sense, some scholars argue that this problem is not the multilateral treaty’s fault; rather, it is the growing dominance of bilateral agreements between developed and developing countries that has been undermining the general effects of the multilateral framework. Hence, they conclude that such treaties should be deemed illegal under international trade law, despite the absence of a clear jurisprudence or interpretation of any rule on this subject. In any case, it may be possible that the traditional argument against regionalization and bilateralization may be correct for other aspects of international trade – in particular those mostly affected by tariff distortions – and that the inclusion of intellectual property rights in the WTO’s single undertaking principle could have been more based on *political* rather than *economic or developmental* reasons. See e.g. Dunkley (2000).

optimal levels of transfers, and whether any particular strategy can conflict with another being simultaneously pursued in the arena of domestic policies and international relations. The following cases attempt to provide an indication of these particular strategies that can align with the classical model of IPR protection or with more liberal applications of such standard, although achieving possibly similar positive results for developing countries.

I. PEER PRODUCTION AS A CHALLENGE TO THE TRADITIONAL MODEL OF INTELLECTUAL PROPERTY RIGHTS PROTECTION

1. Characteristics of the Peer Production system

If asked to introduce the peer production model in only a few words, most cyberlaw experts would certainly begin to describe how this category of collaborative production system became distinguished by the presence of thousands of voluntaries contributing to the successful achievement of a given intellectual task (Benkler, 2002). By making use of each agent's specific abilities, or just by providing its automated resources, the peer production only demands the "creative" work to be performed by a small group of moderators or specifically designed software's, despite the uncountable number of continuous contributions.

However, although not technically a new model of productivity, the peer production system has only become noticed as an innovative form of creation with the wide dissemination of the Internet. One of the first and most well-known, although only recently recognized as an example of peer productive method, is the collaborative work in the academic environment, where a large and continuously growing number of researchers, students and professors contribute to each other on the production of a body of knowledge, without any clear expectation of monetary reward or centralized coordination.

The case of the peer productivity in the academic environment is more visible when one speaks about the research in Mathematics: provided that mathematical discoveries cannot, by definition, be appropriated or have their use excluded, the community of Mathematicians would not have any incentive to contribute to each other, according to the traditional economic theory. However, it is widely known that Mathematicians are one of the most collaborative scholars among any other discipline, where individuals continuously review, criticize, increase and refine each other's contributions. And most important, people who contribute to the development of logical theorems and solutions never consider about preventing others from using their discoveries, even if the access is completely free (Simon, 2002).

Peer production, in this sense, was already present in the society, even if it was only applied in the expansion of certain segments of the human creativity. However, it was

the growth of communication networks which suddenly empowered the potentials of this method to other, more complex economic ventures.

With the development of cheap and fast communication systems, particularly with the widespread use of the Internet, new incentives – which could not be identified by the market or by centralized structures of management, unlike prices or hierarchy-based commands – have risen in order to mobilize countless numbers of individuals across the world. Those people behave through small time-consuming collaborations in different projects, from scientific data-analysis (such as the so-called SETI@home project) to the creation of virtual environments (Everquest and MUD tools), or from the enhancement of open-source softwares (e.g. Linux) to the collective management of a football team (such as the now deceased Web Football Club in the Second Division of the French National League¹) or the building of a real-time updated encyclopedia (being *Wikipedia* the most famous case).

These phenomena are clear examples of how peer production mechanisms are able, in these days, to challenge the classical notions of property and organization which prevail under the market-firm scheme. In the following section, we will discuss in detail to which extent those traditional pillars of productivity are disputable – if they actually are – with regard to this new proposed model.

2. A shift from Coase's paradigms towards the peer production model

In order to understand the level of breakthrough which may have been brought by the peer production, we need to rely on the fact that most of the traditional models of production were dominantly oriented by the thoughts of economist Ronald Coase, who presented one of the most important issues concerning the nature of the market, of the firm and the law (Coase, 1960).

Coase's arguments can be summarized from the general idea of transaction costs taking place between agents and individuals in the market, which derive from the problems associated with the enforcement of property rights and contracts. In this sense, Coase understands firms as a mechanism to avoid transaction costs, but only to the limit where those are able to work as clusters of resources and agents, as well as managing them through a system of hierarchy-based commands.

However, while firms may reduce transaction costs, organizational costs also arise from these structures, so that the sum of every cost determines if the production will be based on a market or on a firm system. In addition, law, as a system of ubiquitous norms that regulate the basic pieces of the economy (property and contract), has a crucial role in this framework to the extent that it can either increase or reduce

¹ For further information, see *The Sun* newspaper report at <http://www.thesun.co.uk/sol/homepage/sport/football/article216518.ece>.

transaction/organization costs, leading to an institutional role in the organization of *the* production.

What is interesting to notice in these basic features of Coase's paradigms is that agents behave in a productive environment according to a very limited set of incentives, namely: a price, a command or a future reward. More important, those incentives strongly depend on a reliable presence of property rights and contracts. Nevertheless, peer production directly challenges this sort of incentives, since neither a hierarchical command, nor a price, or a future monetary reward create any incentives to the current peer production collaborations. And because these traditional incentives cannot explain the sustainability of the peer production systems (Ginsburg, 2001), other types of motivation are proposed: for instance, social-psychological incentives which are embedded in certain category of informational projects, such as reputation (a very convincing argument for the case of the community of Mathematicians) or mere self-amusement, as long as these do not consume a large part of the contributor's time.

With this regard, commons-based peer production frameworks have become able to expand the potential of these new incentives mainly because of two major factors. First, due to the strong reduction of communication costs, represented by the widespread use of the Internet. Second, because the structure of the peer production methods allows a large number of people to contribute, at any time, with only a small increment, however pooled on a very modularized task (Benkler, 2004). Thus, organization costs become relatively reduced because neither time-coordination will be fundamental, nor allocation costs will arise (since individuals will decide by themselves where to concentrate their abilities on a fine-grained, although complex, entrepreneurial project). In sum, the two factors mentioned above will avoid what a Coasean argument would call "information loss" – the problem with assigning the appropriate agent and resource to a certain task – as well as the integration inefficiency, which would prevent individuals from collaborating with each other.

Accordingly, this explains why peer production models do not really contradict Coase's paradigms, but rather expand his arguments from a new structure of organization deriving from technological advances. In addition, peer production will provide a few advantages over the usual set in market or in the firms. Since the allocation of agents and resources can be assigned to the own contributors at the best information available, self-assignment will be possible for each peer to its most adequate task, so that information loss will be reverted into information gains (Bar-Gill et al, 2003). Moreover, it will allow larger groups to concentrate on a single, fine-grained objective, leading to a more efficient allocation and use of resources.

3. Challenges to the peer production model: motivation and organization

Although apparently more efficient than the market-based and firm-based models, peer production may still face several problems, mainly related to organizational

questions. As stated before, peer production systems might enjoy the ability of informational gains and full allocation of resources at an asynchronous level. However, in order to make these features possible, peer production projects must fit into certain organizational requirements.

The first requirement, as already mentioned before, is that peer production ventures must be divisible into modules, where each can be produced independently from the production of others. This feature will avoid costs related to time and allocation of better-qualified agents.

Second, each divisible component should be preferably small in size, so that no project will demand a large amount of continuous efforts from a single contributor. Rather, very small talks will easily adapt to each contributor's level of motivation, as well as it will produce higher productivity from a large number of resources into a small component of the project.

Third, although peer production projects are free from hierarchical costs, some level of integration must be present. This requirement can be implemented through the use of the so-called "peer-review" mechanisms, which allows for continuous quality control and consistency between components. It is interesting to notice that, for the case of certain projects related to content production (e.g., Wikipedia), such a feature will also cover problems related to accreditation of the source and enforcement of third-party copyrights (Varian, 2005), since the task of finding the reputation of the producer will be left to the last user and, therefore, to the sum of previous reviewers of the content.

4. Normative and economic implications

It is not difficult to see that the emergence of a new, possibly dominant mode of production based on collaborative and commons structure will affect several pillars in the institutional setting, particularly in the case of property rights and contracts. Traditional justifications for appropriation of resources no longer fall into every category of production. For instance, intellectual property rights will suffer, and is already suffering, a number of theoretical challenges in the view of the so-called Creative Commons project, as well as many of the open-source movements around the world.¹ The idea of exclusive rights loses more ground for new notions of free access and incentives for the expansion of productivity in certain fields of information and culture, and what is more important, with the support of serious economic arguments behind it.

¹ The Creative Commons is a non-profit organization whose aim is to design the protection of intellectual property rights in a manner to facilitate the use and share of creative works among people. For a discussion on its legal and social implications, see Wagner (2003) and the Creative Commons website, at <http://www.creativecommons.org>

II. RESHAPING INTELLECTUAL PROPERTY PRINCIPLES THROUGH COLLECTIVE RIGHTS: THE CASE OF THE AMAZONIAN “CUPUAÇU”

1. An overview of the “Amazonian tragedy”

Since the early colonization period in the Americas during the 15th century, the vast natural wealth of the Amazon rainforest has been subjected to various forms of predatory exploitation and misappropriation. Today, after the recent trends of economic globalization expressed through the radicalization of traditional intellectual property rights, biological resources are suffering another – though by different means – wave of international misuse of property rights over collective assets, with a remarkable difference: local communities are now being impeded to keep on with their traditional culture and development (Fabricant et al, 2001).

Such a kind of “neo-colonization” has gained expression mainly by initiative of large companies or multinational research centers based in developed countries. These actors usually appropriate the Amazonian natural resources through the use of recognized legal mechanisms such as the so-called “patent rights”, which have already been granted on practically every well-known Amazonian and Andean medicinal plants (Schidlehner, 2003), including those of Andiroba (*Carapa guianensis Aubl.*), Copaiba (*Copaifera sp*), Cat’s Claw (*Uncaria tomentosa*), Maca (*Lepidium meyenii*), Sangre de Drago (*Croton lechleri*), Quebra-Pedras (*Phyllanthus niruri*), and Wormseed (*Chenopodium ambrosioides*).

Resistance, however, has been visible on several entities who act against the abuse of certain protections of the law. One of these movements has become internationally recognized as a leading case against the exploitation of collective resources: the *Cupuaçu* case. In December 2002, the Cupuaçu – a typical Amazonian fruit whose many kinds of derivatives (like oils and chocolates) have been traditionally produced by local communities – has become subject to a strong campaign carried out by a group of Brazilian NGOs, whose sensitivity to the issue of biopiracy laid the guidelines for a countermovement against the overuse of individual property rights. The operation has been coordinated by the Brazilian network Amazonian Work Group (GTA) in collaboration with Amazonlink.org, other NGOs and groups of small and medium producers, covered by strategies including workshops, websites and awareness-raising activities amongst local communities and general media.

One of these activist entities, the NGO Amazonlink, took on a chief role over those efforts when it casually noticed the existence of several patent applications (mostly in developed countries) on cupuaçu derivatives. Moreover, Amazonlink also discovered that the name of the fruit had been registered as a trademark in the same countries by a Japanese company named Asahi Foods and its allied American conglomerate, Cupuacu International. Many of those exploited plants, as well as names associated to

indigenous communities, have had their typical names trademarked (for instance, AçaiTM, Sangre de DragoTM and CupuaçuTM). In fact, most of these illegitimate registrations have also been extended to protection in the realm of the Internet, such as the use of internet domains for commercial purposes (e.g., www.cupuacu.com, www.cupuacu-int.com, www.sangrededrago.com, www.yanomami.com and www.ashaninka.com).¹

In sum, the Cupuaçu campaign, by assembling political initiatives with legal actions pursued in national courts, went beyond the mere discussion over patents and also had to address a variety of legal issues concerning piracy of biological resources and cultural inheritance. A first complaint was submitted against the trademark number 4126269 CUPUAÇU registered at the Japanese Patent Office. In addition, a group of NGOs plans to file against a request for patent EP1219698A1 on Cupuaçu oils and chocolate at the European Patent Office in Germany.

The following sections, mostly extracted from the Amazonlink reports, explain the developments and importance of the Cupuaçu case in more detail. More importantly, it reflects how the use of intellectual property rights in an orthodox fashion can frequently be advantageous for developing countries and their local communities.

2. Cupuaçu fruit: features, economic uses and means for local development

2.1. Features of Cupuaçu fruit and traditional applications

Cupuaçu (*Theobroma grandiflorum*) is a small to medium-size tree in the rainforest canopy that can reach up to 20 meters in height. Its fruit, which ripens in the rainy months of summer, is generally regarded as a primary food source for both indigenous peoples and animals in the region. It is very well known for its creamy, exotic-tasting pulp, making it highly demanded in certain South American cities. The fruit pulp has been used in Brazil and Peru to make fresh juice, ice cream, jam and other typical derivatives. Furthermore, Cupuaçu has a close familiarity with the cocoa-tree (*Theobroma cacao L.*), so that its seeds can also serve for the production of chocolate-like products. Cupuaçu-chocolate has been produced in Brazil since 1983 and is known as “Cupulate”. However, cupuaçu is very distinguishable from the usual cocoa fruit due to certain nutritional properties. Differently from cocoa, cupuaçu does not contain substances like theobromine (a similar additive like caffeine) which makes it a healthier alternative to cocoa-made chocolate.²

With regard to its traditional uses, the cultivation of the cupuaçu fruit has not only been important as a food source but also as an essential element of certain

¹ See generally, Biopiracy in the Amazon – Cupuaçu, at <http://www.amazonlink.org/biopiracy/cupuacu.htm>. See also Grupo de Trabalho Amazônico (GTA), at <http://www.gta.org.br>

² See Biopiracy in the Amazon – Cupuaçu, at <http://www.amazonlink.org/biopiracy/cupuacu.htm>.

conventional rituals. First, its role as a primary food source is known for many generations among indigenous and local communities spread in the Amazon forest, distributed along the Rio Negro and Orinoco rivers. In addition, cupuaçu trees have been very important for religious and medical purposes, as its seeds were used by indigenous people who drink cupuaçu-made beverages after they have been blessed by a shaman to facilitate difficult births. Those seeds also have applications by the indigenous Tikuna tribes for abdominal pains.

2.2. Economic potential – the Cupuaçu Chocolate (“cupulate”)

One of the most important features in the cultivation of cupuaçu fruits is the possibility to produce chocolate-like products, due to the close relationship of the cupuaçu tree to the cocoa-tree (*Theobroma cacao L.*). In this sense, Brazil has a relatively advanced industrial and trading policy regarding the development of this kind of foodstuff, mainly represented by initiatives in the northern region where the production of the so-called "cupulate" is well known.

On the other hand, the economic potential of the cupulate has already gathered attention from competitors in developed countries, with little rewards from primary producers in the Amazon region. In Japan, for example, this product has already been produced and commercialized in large scale: in the first quarter of the year 2002, the Amazon state has registered the export of nearly 50 tons of cupuaçu seeds to Japan, with an expectation that this amount will increase to more than 200 tons of chocolate production in the following years.

3. The disputes over the use of cupuaçu – collective vs. individual property rights

3.1. Foreign patent registrations over cupuaçu

As a consequence of the facts seen above, several aggressive initiatives from Japanese companies in order to produce and commercialize cupuaçu-based products have led to a series of legal issues in some national courts. Currently, there are registered patents and also some applications for patents concerning the techniques of extracting cupuaçu-pulp and the production of cupuaçu chocolate.

According to those patents, the alleged inventor of cupulate was Mr. Nagasawa Makoto, who is at director of Asahi Foods and also owner of the American company "Cupuacu International Inc." that holds some patents worldwide on the Cupuaçu fruit. It is interesting to notice that almost every patent abovementioned was registered by the company Asahi Foods Co., Ltd. from Kyoto, Japan, or its related companies.

Registered Patents on Cupuaçu

Registering Company	Place of registration	Date of publication	Title	Registration Number
The Body Shop International Pic*	United Kingdom	05/08/1998	Cosmetic composition comprising cupuaçu extract	GB 2321644A
Asahi Foods Co., Ltd*	Japan	30/10/2001	Lipids originating from cupuaçu, method of producing the same and use thereof	JP 2001299278
Asahi Foods Co., Ltd*	Japan	18/12/2001	Oil and fat derived from cupuaçu – <i>Theobroma grandiflorum</i> seed, method for producing the same and its use	JP2001348593
Asahi Foods Co., Ltd*	European Union	03/07/2002	Fat originating in cupuaçu seed, process for producing the same and use thereof	EP 1219698A1
Asahi Foods Co., Ltd*	WIPO	03/07/2002	Fat originating in cupuaçu seed, process for introducing the same and use thereof	WO0125377
Cupuaçu International Inc*	WIPO	17/10/2002	Cupua seed-origin fat, process for producing the same and use thereof	WO02081606

3.2. Trademark Registrations over the name “Cupuaçu” in Japan, USA and Europe

Besides the registration of patents, Japanese companies have also registered the name "Cupuaçu" as a Trademark for various product classes (including chocolate) in Japan, the European Union and in the US.

According to the Amazonlink website, it was reported that the lawyers of Asahi Foods Co., Ltd. threatened with fines up to \$10.000 to a company who was using the name "cupuaçu" on the label of a cupuaçu jelly in Germany. However, several European companies which are using such a name are under dispute with Asahi Foods in the EU over the rights of the use of the word "Cupuaçu" for their products. Amazonlink was also subject to attention from legal representatives of Asahi Foods: as the website reports, “when checking out export possibilities for sweets and other Cupuaçu products to Germany, Amazonlink.org was told to let the word "Cupuaçu" under no circumstances appear on the product”.

3.3. Reactions in Brazil – from political to legal action

After becoming aware of the infringements over the legitimate use of cupuaçu, leaders and organizations in Brazil started a mass campaign in order to attract attention from the civil society and the government.

The Brazilian government, in this sense, has been very receptive and supportive in the coordination of the Brazilian campaign. The Brazilian President, Mr. Luis Inacio Lula da Silva, with the cooperation of his Environment Minister Ms. Marina Silva, is known for his policies against forms of biopiracy and provided full political support in the battlefield of the Cupuaçu case under national courts and the World Intellectual Property Organization. Such a strong embracement comes from the idea that the Cupuaçu case could become a world “landmark” in the empowerment of local communities, not only with regard to Amazonian and Brazilian civil society but also in other parts of the globe (Schmidlehner, 2003).

3.4. Deep in the legal battle: a victory for the recognition of collective property rights

It is important to bear in mind that no progress in the field of collective property rights could be achieved unless the technical-legal tools were properly operated. In the following we will describe some of the main arguments which were presented under the Japanese Patent Office and led to an important victory for local communities in Brazil.

The main function of a trademark is to inform potential buyers about the origin of traded goods and services, as well as their distinct features. Companies enjoy a wide range of alternatives in order to achieve this objective – may it be through the use of words, logotypes, shapes or even sounds. For a name, logo or sound to be considered a trademark and, thus, to be able to be registered, must be distinctive. Therefore, a pure descriptive name does not provide any assistance to the consumer to identify the origin of products, so that it cannot be regarded as a valid trademark.

During the administrative procedure under the Japanese Patent Office, the leading argument by the applicants was based on the distinctive character of the name “cupuaçu”, which is nothing else than the popular, typically Brazilian-indigenous name, associated to the tree (and its fruit and seeds) known in the scientific community as *Theobroma grandiflorum*.¹

Moreover, before choosing a name as a trademark, several factors related to the distinctiveness of the designation must be carefully evaluated. In the international

¹ The case was brought by Amazonlink in collaboration with the Brazilian Institute for International Trade Law and Development (IDCID). The reports accounted in this article can be found in more detail in Edson Beas Rodrigues Jr., “Caso encerrado: o cupuaçu é da Amazônia (2004),” at www.prodepa.psi.br/sqp/pdf/Caso%20encerrado_Ocupuaçu%20é%20da%20Amazônia.pdf.

arena, there are five categories which are applied to assess the level of distinctiveness of a mark: creative marks, arbitrary marks, suggestive marks, descriptive marks and generic names. Among these mentioned categories, in general, only the generic marks cannot be registered as trademarks.

In the Cupuaçu case, the problem of the name “cupuaçu” is evident: no one should be able to register a generic name which merely serves to designate the raw material or primary resource of the traded product, since it would leave no space for other competitors to choose another plausible alternative for denominating such a material.

For instance, in the case that a Brazilian company would decide to use the name “cupuaçu” in the label of a frozen cupuaçu pulp and commercialize it in one of the 25 Member States of the European Union, in the United States or in Japan, that company would be impeded to use such a designation in its labels and forced to create another name capable of referring to the main raw material of the traded good. In other words, registrations of this kind would end up by creating a non-tariff barrier to trade, obstacles to free competition and, last but not least, they would transfer a Brazilian cultural heritage from the public domain to the private sphere.

Under these arguments, and one year after the beginning of the administrative procedure, the trademark annulment action was decided on March 1st 2004 by the Japanese Patent Office. The JPO examiners fully agreed with the arguments of the Brazilian NGOs and decided to cancel the trademark under dispute. In short, the decision was grounded on the following arguments:

a) The designation “cupuaçu” is the name of a fruit from which oils and food derivatives can be extracted; since it is utilized to distinguish these oils and derivatives, the name is a common designation for a raw material and, therefore, falls under the prohibition of Article 3(1)(iii) of the Japanese Trademark Law;

b) On the grounds of consumer and competition protection, and by relying on Article 4(1)(xvi) of the Japanese Trademark Law, the JPO examiners have considered that the possible existence of mark named “cupuaçu” is capable of misleading consumers, to the extent that it was registered in 1998 by Asahi Foods company in order to designate foodstuffs which had in their composition any oils or derivatives from cupuaçu fruit. Thus, in this specific case, the registering company could produce a foodstuff without ant cupuaçu oil or derivative, but with a trademark “cupuaçu” in its label.

With this decision, the administrative procedure has ended in Japan. Moreover, the deadline for any appellation by the Japanese company has expired, so that the revocation of the trademark has become definite in April 2004. Such a battle became a leading case for the preservation of the Brazilian cultural and biological heritage, although many other designations must still be recovered: that is the case of Brazilian

names such as “acerola”, “açai”, “cachaça”, among other purely national names which were registered at patent offices around the world.¹

4. Policy impacts: local development through fair use of intellectual property law

In the background of such a complex problem that we described above, the most important issue which must be kept in mind is that the Western traditional concept of “property” is not necessarily intrinsic to certain indigenous cultures and modes of production. Some argue that the non-conformity of these local traditions with the domain of individual property rights has led to discrimination against these communities and caused some levels of economic disadvantage. They are condemned to be permanent losers in a system whose rules are established and constantly manipulated in the upstream rule-makers.

It is true that proceeding with requests for the annulment of patents and trademarks are only one of the many possible strategies in the difficult task of promoting the autonomy of indigenous communities. The use of legal procedures and the creation of new institutional rules in order to protect traditional knowledge may improve the protection of their lifestyle, but will not resolve the problem in the long run. Aside from mere economic arguments, the enforcement of sustainable development and fair relations with traditional cultures must go beyond the limits imposed by international trade laws. For instance, some activists contend that patents on life forms must be prohibited in any case, together with the review of many concepts embedded in the notion of intellectual property itself.

Finally, a new global and social trend can be fortunately observed in the example we have analyzed above. Issues concerning biopiracy seem to be increasingly unifying different social and political groups. It is a common concern among Brazilian citizens the fact that a Japanese company registers trademarks and patents belonging to an Amazonian culture.

On the other hand, many different ideas arise about what the meaning of fighting biopiracy, which generates many internal disputed on which approach should be adopted. Some people say, for example, the preservation of biological and cultural diversity should be done by strengthening indigenous groups as autonomous partners in this process. In a more radical stream, conservative groups in Brazil argue that even NGOs and indigenous organizations are responsible for facilitating biopiracy and causing what they usually call the “internationalization” of the Amazon forest. Hence, these groups propose the build of large-scale military and surveying projects, as well as the review of environmental and indigenous policies under the interests of “national

¹ To have an idea of its significance, the Brazilian President sanctioned a new law (Lei 11.675, of 19 May, 2008), which declared the cupuaçu as a “national fruit.”

security”. This discussion, however, is fully placed in the political field and depends on a strong participation from the entire society.

III. “ABANDONWARES” AND ORPHANED WORKS IN COPYRIGHT LAW

1. What are orphan works and “abandonwares”?

This last case is currently the most undeveloped and controversial in the legal and economic literature. In times where there have been intense debates about the current role of intellectual property law in the era of Internet, one particular problem has arisen without any deeper attention from society. While it is very common among scholars to discuss on how to face the deliberate misappropriation and well-known practices of “piracy” against *valuable* intellectual property goods, little consideration has been given to the legality of using *no longer valuable* copyrighted works – or at least no longer valuable for ordinary commerce.¹

However, because of its increasing presence, such a practice still remains in a limbo between the notion of legitimate use and fair protection of property rights. With only a few exceptions, copyrighted works are always kept within their terms of protection but are frequently becoming unavailable to the public after a short period. This is the case of what has been generally named “abandonwares” and orphan works.²

Abandonwares and orphan works share a very similar problem, which consists on the transfer or authorization of using intellectual property rights. Nonetheless, each category bears a difficulty at a different level of property rights: in abandonwares, it is the non-availability of a copyrighted work, while in orphan works is the non-locatability of the copyright owner. An orphan work is a very specific case where the copyrighted work has owners who are difficult or even impossible to locate, and thus no license to copy or to issue copies can be legally obtained. Abandonwares, on the other hand, are softwares belonging to copyright owners whose identity may be known or locatable, but owners are not willing or interested in supplying the software. For this reason, the computer industry has devoted much more attention to prevent the use of abandonwares than of orphan works.

2. The problem raised within the framework of classical copyright law and economics

Under ordinary copyright law, there is an exclusive right of the owner of a copyrighted work to dispose on the manipulation and issuing of copies of his work,

¹ See Kevin Savetz, “Can “Abandonware” Revive Forgotten Programs?” byte.com, at <http://www.savetz.com/articles/byte-abandonware.php?sort=date>.

² It should be noted that there are cases where no commercial copies are for sale but no abandonment is either observed, because the copyright owner is available and willing to license the work.

that means, either the reproductive or transformative (derivative) use. The idea lying under this protection is that copyright owners earn profits by granting licenses or selling copies against a fee. However, since copyright law does not oblige copies of the work to be made available to the public, the owner is able to stop the distribution of his work at free will, even if the work may still be useful, although surpassed by a more sophisticated version (which replaces the older work).

Such a practice from the industry suggests the existence of two dominant categories of abandonment¹: (1) commercial abandonment, where the supply of the software is no longer commercially profitable or becomes unpopular, due to new hardware technologies and consumer preferences; and (2) strategic abandonment, where the owner ceases the supply in order to replace it by a newer version.

Since both distributors and consumers may still find utility or have actual needs for those copies, the unavailability of a copyrighted work under those circumstances becomes an issue outside the scope of ordinary copyright laws. As opposed to common sense, abandonwares may have many uses, starting from mere retro-computing enthusiasts to people who need to run old filetypes in modern computers, including researchers who make use of old softwares as sources.

From an economic perspective, even if copyrighted owners make their works unavailable to the public, this does not imply that they are no longer being used or demanded. Rather, where a demand which is not being fulfilled by the market still exists, this would lead to the rise of a *missing market*, which copyright law was not designed to predict or prevent.

Accordingly, the enlargement of that missing market gives space to a number of problems. For instance, as newer and more advanced versions of softwares are being issued in the market, old computer hardwares are likely to not be capable of supporting them. Therefore, the exclusive supply of new versions might force consumers to unnecessarily upgrade their hardwares with respect to their needs.

Another common problem in forbidding abandonwares is the further unavailability of source codes to modify a computer program, either in a way to correct or improve a computer application. Although this may be easily solved within the classical framework, which considers the source code as a trade secret (and thus legally able to be undisclosed), the economic problem arises when the software publisher goes out of business or stop the support service for its software, making consumers helpless when patches are needed. As a consequence, users are forced to adapt under higher costs,

¹ Although D. Khong (pp. 4-5) also finds a third category (temporary abandonment), we believe that such cannot be properly considered a kind of “abandonment”, to the extent that it will, in a future event, become available again by copyright owners. See Khong (2005).

mainly by switching to a whole new set of systems without the benefit of using a cheaper and simpler patch.

The examples above demonstrate that current copyright law, although designed to protect and give incentives for technological advances, is also unable to cope with the need for efficient uses of all varieties of copyrighted works.

3. Outlining some solutions

In the case of softwares, rather than other types of media (songs or books), orphanhood does not seem to be a very complicated issue, since the dawn of the large-scale software production was introduced in a period when the alertness with intellectual property rights was already spread and established. Therefore, it is very likely that almost every computer program made commercially available has been duly registered and now it has become easy to track virtually any copyright owner.

Nevertheless, some changes in the current registration system should still be proposed. One of the major suggestions being made in this sense is the modification of the copyright registration system determined by the Berne Convention, which requires no formality for the subsistence of copyright protection. Any procedure requiring more traceability at an early stage for registration would, in principle, create incentives for fewer disputes on orphan works. In alternative, even if the absence of formality may be regarded as a protected principle in intellectual property law, at least an *ex post* dispute solution procedure which would be entitled to confer a “first come first served” property for orphan works would foster proper incentives for companies to duly register their creations.

Abandonment, in its turn, seems to be a much more serious challenge than orphanhood. Both issues are interrelated, to the extent that orphanhood remains a minor problem when the final licensing choice is left to the copyright owner: the mere existence of an efficient registration system in order to cope with orphanhood would not be sufficient in cases where licensing cannot be reasonably obtained even when the copyright owner is known.

Arguments in favor of the free use of abandoned softwares tend to support mechanisms which are capable of inducing the copyright owner to abandon his copyright, or at least to induce the company not to have an idle behavior towards his older creations. Such a mechanism could be enforced through the imposition of a copyright renewal system, where the failure to renew after a certain period would lead to the termination of the copyright. Since most computer programs tend not to last in the market for a period of more than 5 years (when they are unavoidably replaced or updated), this copyright protection should last for a reasonable short period between the necessary investment recovery and effective abandonment by suppliers. Moreover, an incentive for copyright owners to abandon their creations could consist on charging

a fee with respect to the renewal of the license. This would lead to a cost-benefit decision from the copyright owner, where the cost of renewal would have to be weighted with the remaining (if any) future profits from the abandonware, preventing thus the “idleness” of the owner who would prefer to stop its supply. However, because this solution would depend on an efficient pricing rule for the renewal fee, this would obviously be a difficult task when one think about the existence of a enormous variety of types, uses and categories of softwares.

Finally, some kind of injunction remedy could also be imposed over the copyright owner, or liability mechanisms towards abandonware users. In the first case, some suggest any rule allowing for a commercially abandoned work to be necessarily used, provided that a few criteria (such as commercial unavailability, hardware restrictions and academic purposes) are met. In the alternative, a liability rule could also determine that the copyright owner would not be entitled to prevent the use of its abandonware, although it is imposed to users the payment of a fee – which would also lead to another difficult pricing rule.

CONCLUDING REMARKS

Each of the three cases discussed above illustrate a particular aspect of dealing with international dissemination and protection of knowledge, beyond the usual state-to-state public law relationship. Where international agreements, whether multilateral or bilateral, fail to account for the demands of local economic development, there still seems to be plenty of room available for groups and individuals to manipulate the legal tools, in order to facilitate their access and sharing of knowledge.

The case of internet peer production, which has been gradually accepted by standard economic literature, demonstrates that the classic legal incentives for not sharing knowledge (and thus profiting from secrecy or IP monopolies) are no longer the most efficient strategy in certain productive environments, especially those highly dependent on copyright efforts such as software and literary works. This may be an interesting approach for many developing countries, which lack the resources and expertise to rely on monopolistic forms of knowledge dissemination.

In contrast, the case of the Brazilian Cupuaçu provides evidence that the standard tools and procedures of IPR protection can now be used in an unconventional way: not in order to enforce an economic monopoly, but to protect the collective use of certain cultural endowments by local communities, thus becoming a strong paradigm for other developing nations.

Finally, the case of the “abandonwares” remains in the very frontier of the expansion of IPR protection. In terms of economic and legal policy, it suggests that lawmakers should provide new mechanisms that force the copyright owner to give away his

abandoned works, in case it fails to make adequate use of them. In terms of development policies, this could create a major incentive for them to either drastically reduce prices of old – but still useful – software, or allow their use under more flexible conditions.

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