Copyright Infringement as User Innovation: An Economic Analysis of *Dōjinshi*

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Abstract

We examine the relationship between the copyright holder of the original work and its derivative creator based on a simple economic model that incorporates both positive and negative externalities of the derivative work. It is shown that letting the derivative creator freely use the original work can be optimal for the copyright holder. Furthermore, when the free use of the original is optimal for the copyright holder, it is also optimal for social welfare, though the opposite is not necessarily true.

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1 Introduction

Major Japanese anime studios and manga publishers have been ignoring massive copyright infringement by *dōjinshi*, which usually refer to Japanese manga written by amateurs.[1] Many of *dōjinshi* are derivative works using characters of famous commercial anime or manga works. In most case, however, they are created and sold without official permissions from the copyright holders of the original works. Thus, it is highly possible that the activity of *dōjinshi* creators violates the article 28 of Copyright Law of Japan, which states the right of the original author in the exploitation of a derivative work.[2]

Although Japanese copyright law lacks a generalized fair use provision, some limited use of copyrighted material without a license is permissible. For example, the article 30 states the "private use" of copyrighted material, which refer to personal use, family use or other similar uses within a limited circle. The publication of *dōjinshi* by amateurs, however, is far beyond the "private use." For example, *Comiket*, the short duration spot markets held twice a year in Tokyo for the sale of *dōjinshi*, is not only Japanese but also the world's largest handmade comic book fair that has recently drawn over a half million people.[3] Moreover, most *dōjinshi* works are for sale not only at comic book fairs such as *Comiket* but also at chain bookstores such as *Mandarake*, which is a publicly-traded corporation. Thus, the sales of *dōjinshi* are never "uses within a limited circle."[4]

Mehra (2002) reviews reasons for the existence of *dōjinshi* markets and

[1] For the details of *dōjinshi*, see, for example, the article "Dōjinshi" in Wikipedia (http://www.wikipedia.org/, English, last accessed on 2010/6/23).

[2] For an economic rationale of the copyright protection of derivative works, see, for example, Landes and Posner (1989).

[3] See the article "Comiket" in Wikipedia (http://www.wikipedia.org/, English, last accessed on 2010/6/23).

[4] See Mehra (2002) for further discussion about the Japanese copyright law and *dōjinshi*.

discusses the following two factors have had an important role: positive externalities of *dōjinshi* and legal environment in Japan. Anime and manga industries can benefit from *dōjinshi*. The *dōjinshi* markets possibly provide a source for talented creators, serve to promote sales of the original works, and produce new styles and ideas that can be incorporated into commercial anime and manga. Compared to these benefits from the *dōjinshi* markets, benefits from litigation are small under today's Japanese legal environment, which is characterized by scarcity of lawyers, prolonged litigation, and small amount of the damage award. For example, Nihon Keizai Shinbun, a Japanese major business newspaper, filed copyright claims in both Tokyo and New York, and obtained the damage awards roughly $800 at the Tokyo District Court and $420,000 at the Second Circuit. He conjectures that the weak incentive of the copyright holders to litigate has made the positive externalities of *dōjinshi* relatively large and stimulated the creation of new styles and ideas by *dōjinshi* creators, which have contributed the competitiveness of the Japanese anime and manga industries.[5]

In this paper, we examine the relationship between the copyright holder of the original work and its derivative creator based on a simple economic model. As well as Mehra (2002), we focus on new styles and ideas created by derivative creators, which are a kind of user innovation since most of *dōjinshi* creators are also consumers of the original anime and manga. The *dōjinshi* phenomenon in Japan is unique in the copyright world, but there are many similar cases in technological innovation of manufacturing and software. Henkel and von-Hippel (2005) discusses the impact of user innovation on social welfare in a qualitative way and concludes that social welfare is likely to be increased by the presence of user innovation, though they do not present formal models. In this paper, we present and discuss

[5]For the global popularity of Japanese anime and manga, see, for example, "Anime Fantasy Is Big-Biz Reality" by Hiroko Tashiro *BusinessWeek*, March 19, 2007.

the welfare impact of *dōjinshi*, a type of user innovation, using a simple economic model.

We construct a model incorporating two types of externalities that the activities of the derivative creator can cause. First one is the positive externalities as explained by Mehra (2002), that is, new styles and ideas for content creation. Second one is negative externalities to the demand of the commercial work due to the possibility of misuse as is pointed out by Liebowitz and Margolis (2005).[6] The derivative work can have negative impact on the demand of the commercial work if every type of expression is tacitly allowed. In the case of *dōjinshi*, many of them depict the original works' characters in a pornographic manner, which may decrease the commercial value of the original characters. Just because of this reason, Nintendo, the copyright holder for *Pokemon* series, made a criminal declaration under Japan's Copyright Law in 1999, and an author selling a *dōjinshi* series of *Pokemon* characters was arrested.[7]

We assume that the copyright holder such as anime studio or manga publisher can perfectly exercise its right and exclude the negative externalities of misuse by controlling the derivative creator through license agreement. The copyright holder chooses whether to let derivative creator freely use its original work or to license the right. Under today's Japanese weak legal environment, licensing may not be a practical choice for copyright holders of anime and manga. However, Japanese government has been pursuing several legal reforms such as increasing the number of lawyers and introducing the judicial systems. If the legal reforms strengthen the incentive to litigate, licensing can work as a practical option for Japanese anime studio and manga publisher.

[6]More generally, derivative works may cause congestion externalities as Landes and Posner (2003) point out. If proliferation of original work's characters causes confusion, tarnishing of the images, or boredom, the value of the characters would decrease.

[7]See Mehra (2002) for further details.

We also incorporate the size of the derivative work's market into the model. We examine whether or not the free use by the derivative creator can be optimal for the copyright holder when the opportunity for revenues increases as a result of large growth of the derivative market. It would be possible that the *dōjinshi* markets exist in Japan because they are relatively small compared to the markets of the mainstream anime and manga.

Using the model incorporating the above features, we first show that letting the derivative creator freely use the original work can maximize the profits of the original's copyright holder depending on the extents of negative externalities, the value of derivative work's new styles/ideas, and the size of the derivative work's market. Furthermore, when the value of derivative work's new styles/ideas is quite large, only the extent of negative externalities affects the copyright holder's decision whether or not to license. Finally, we show that when the free use of the original work maximizes copyright holder's profits, it also maximizes social welfare, though the opposite is not necessarily true. It can be inferred that Japanese current situation, where major anime studios and manga publishers are ignoring copyright infringement by *dōjinshi*, can be socially desirable.

Most studies in the literature have investigated copyright protection by governments (Novos and Waldman, 1984; Johnson, 1985; Yoon, 2002). They show that no protection against the illegal copies may be socially optimal since consumers can enjoy copyright products with low prices. To the best of our knowledge, there are few studies focusing on positive externalities of the illegal copying on the supply side.[8] Conner and Rumlet (1991) and Takeyama (1994) focus on the positive externalities of the illegal copies on the demand side, showing that not protecting copyrights at all could be the best policy if it causes network externalities on the demand side. Moreover,

[8]For patent and innovation, Bessen and Maskin (2009) show that imitation can encourage sequential innovation and benefit the original inventor.

they do not take into account the negative externalities of the illegal copies. For the examination of the derivative works made by consumers, we need to discuss their negative externalities on the demand side, comparing them with the positive externalities.

The rest of the paper proceeds as follows. In section 2, we introduce a case of the close relationship between commercial anime/manga and *dōjinshi*. Section 3 explains the model, and section 4 shows the results of the analysis. Section 5 concludes the paper discussing policy implications of the analysis.

2 Commercial anime/manga and *dōjinshi*: a case

In this section, we see the close relationship between *dōjinshi* and commercial anime/manga in a case of a popular Japanese anime series *Gundam*.

2.1 Anime series *Gundam*

Gundam is the generic name of semi-sequels to the 1979-1980 serial TV show *Mobile Suit Gundam*, a sci-fi animation of future space war.[9] *Mobile Suit* in the title is the designation of the fictional various military robots that appears in the show, and *Gundam* is the name of the robot that the main character uses. The series are semi-sequels because not all the titles in the series are direct sequels to the first TV show *Mobile Suit Gundam*. Some titles are spin-off, and some others are independent works that shares only the key concept of the story, the basic design of the military robots, and the name of *Mobile Suit* and *Gundam*.[10]

[9]The explanation of *Gundam* series in this section refers to *Gundam for Adults* (in Japanese) published by Nikkei Business Publications, Inc. in 2004. In the followings, a reference title followed by "(in Japanese)" is the title of Japanese literature that are translated into English by the authors.

[10]For general information of *Gundam* series, see GundamOfficial.com (http://www.gundamofficial.com/index2.html, last accessed on 2010/6/23).

All the titles have been produced by an animation studio Sunrise, with a strong tie with Bandai, a toy manufacturer, since the second sequel series *Mobile Suit Zeta Gundam* in 1985-1986.[11] Bandai bought merchandising rights for the series from the sponsor of the first TV show, which was also a toy manufacturer, after the air of the show went off in 1980. Bandai then released plastic model kits of the military robots (*Mobile Suit*) including *Gundam* and got huge success. The character merchandising of the *Gundam* series has now expanded to many types of goods including toys other than plastic model and video games. This success of the character merchandising has been driving Sunrise and Bandai to release new *Gundam* series.

2.2 *Yaoi* genre in *Dōjinshi*

Yaoi is a female-oriented genre of fictional media such as manga and novels that focus on idealized homosexual male relationships.[12] The genre began as a specific type of self-published works by amateur female creators in the *dōjinshi* market in the late 1970s to early 1980s, and became a popular genre during the early 1990s.

The content of the early *Yaoi* works was parody of commercial anime and manga works mainly for young boys. The *Yaoi* creators made their own stories replacing the close friendships of the male characters with homosexual one. The most poplar commercial anime/manga works among the *Yaoi* creators in the 1980s were *Captain Tsubasa*, the story of Japanese youth football team, and *Saint Seiya*, the story of five mystical warriors called the "Saints."[13] Regardless of homo erotic element, *Yaoi* works were not

[11] Sunrise became a subsidiary of Bandai in 1994. Currently, both Sunrise and Bandai have been subsidiaries of Namco Bandai Holdings since the merger of Bandai with Namco, a game developer and amusement facility operator, in 2005.

[12] The following explanation is based on the article "*Yaoi*" in Wikipedia (http://www.wikipedia.org/, English, last accessed on 2010/6/23).

[13] See the articles "*Captain Tsubasa*"" and "*Saint Seiya*" in Wikipedia (http://www.wikipedia.org/, English, last accessed on 2010/6/23).

controlled by media restrictions, and the above two titles, *Captain Tsubasa* and *Saint Seiya*, largely popularized *Yaoi* genre in the 1980s.

2.3 When *Gundam* met *Yaoi*

The *Gundam* series originally targeted male audience, who would buy toys of the military robots such as plastic model kits. This marketing strategy has changed since *Mobile Suit Gundam Wing* in 1995-1996. In 1988-1989, Sunrise produced *Yoroiden Samurai Troopers*, the story of five handsome boys to fight against a powerful evil spirit, which was similar to *Saint Seiya*, and obtained many female fans who like *Yaoi*.[14] For the production of *Mobile Suit Gundam Wing*, Sunrise used two creators from the staff of *Yoroiden Samurai Troopers*. Unlike previous *Gundam* series, *Mobile Suit Gundam Wing* has five main characters who are all handsome boys, and the friendship of those boys is a key theme in the story. Although a key creator of *Mobile Suit Gundam Wing* answered to an interview that obtaining female fans was not objective, the work brought many female fans to the *Gundam* series and many *Yaoi dōjinshi* of the work were created.[15]

Mobile Suit Gundam Seed in 2002-2003 further increased female fans and sales of DVDs. Not only its main characters but also other supportive characters are all handsome boys, and the story focuses on their friendship and conflict. In an interview with a major Japanese newspaper, the producer of the show answered that unlike the sales of previous *Gundam* series' DVDs, sixty to seventy percent of the buyers were young women.[16]

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[14] See the article "*Yoroiden Samurai Troopers*" in Wikipedia (http://www.wikipedia.org/, Japanese, last accessed on 2010/6/23).

[15] *Gundam for Adults* (Nikkei Business Publications, Inc., 2004), and the article "*Mobile Suit Gundam Wing*" in Wikipedia (http://www.wikipedia.org/, Japanese, last accessed on 2010/6/23).

[16] "The DVD and CD sales of *Mobile Suit Gundam Seed* are surprisingly high due to enthusiastic young female fans (in Japanese)," *Yomiuri-shinbun evening paper*, December 11, 2003.

3 Model

We consider two content providers: the publisher and the derivative creator. They provide reproductions of their works (books, DVDs, and so on) in monopoly markets and interact in the following way. First, the publisher invests to the quality of the original work and provides its reproductions to the market. After the release of the original work by the publisher, the derivative creator provides reproductions of the derivative work, whose market is independent to the original work's market.[17] Finally, after the release of the derivative work, the publisher produces the second original work that is a sequel, spin-off, or remake to the first original, adding the new styles and ideas created by the derivative creator if available. Then, the publisher provides reproductions of the second original work.

The demand function of each monopoly market is given as

$$p_i = q_i \left(\alpha_i - \frac{1}{4} x_i \right),$$

where $i = \{o1, o2, d\}$ denotes content in each market: $o1$ and $o2$ are the publisher's first and second original works, and d is the derivative work of the first original, respectively. p_i is the price of each work's reproduction, x_i is the number of reproductions, and q_i is the quality of each work. In the above specification of the linear demand function, the quality q_i and/or the parameter α_i affect the size of demand. The choice of $1/4$ for the slope parameter is to simplify the analysis and not crucial.

Marginal costs of reproductions are all zero, and there are no fixed costs. In each market, the optimal price that maximizes the profit, which is equal to the revenue by the assumptions, is $p_i = q_i \alpha_i / 2$, and the maximized profit π_i is given by

$$\pi_i = q_i \alpha_i^2.$$

[17] Derivative works are not necessarily complement nor substitute to the original. See Landes and Posner (1989).

For the publisher's first original work, we assume exogenous investment to the quality and normalize as $\alpha_{o1} = 1$ and $q_{o1} = 1$.[18] Then, the profit from selling reproductions of the first original is $\pi_{o1} = q_{o1} = 1$. In the following, we further specify the demand functions and the qualities of content for the derivative and second original works, respectively.

3.1 The derivative work

The derivative work's quality q_d is given as the sum of the values of new styles/ideas by the derivative creator and copying part of the original like using the original's characters, and specified as

$$\begin{aligned} q_d &= s(1-e) + (1-s) \\ &= 1 - es. \end{aligned}$$

The first part of the above equation, $s(1-e)$, is the quality added by the derivative creator. $s(0 < s < 1)$ is the parameter of the added quality of new styles/ideas, and e is the publisher's licensing strategy against the derivative creator. For e, we assume that it is discrete taking only two values: $e = \{0, 1\}$.[19] When the publisher chooses $e = 1$, it exercises the right and controls the quality of the derivative work by license agreement. We assume that when $e = 1$, the publisher does not allow the derivative creator to add her original styles and ideas, which can cause negative externalities to the demand of the second original work. On the other hand, when the publisher chooses $e = 0$, it tacitly allows the free use of the first original work, and

[18] $q_{o1} = 1$ can be also driven by specifying the following investment model. Let the amount of investment be j and assume that the quality of the content is determined as $q_{o1}(j) = 2(j - \frac{j^2}{2})$. Then, the investment maximizing the quality is 1 and thus the quality of content is $q_{o1}(1) = 1$.

[19] The publisher can also have the mixed strategy, making e continuous. When e is continuous, however, the analysis become quite complicated though the implication is basically the same as the one for the discrete case.

the derivative creator can add her original styles and ideas without being controlled by the publisher.

The second part of the equation, $(1 - s)$, is the copying part of the original work. In this specification, we first assume that the value of the copying part is less than q_{o1}, which is equal to one. Then, we assume that the derivative creator's new styles/ideas and the copying part of the original work contribute to q_d in the reverse direction. In other words, the more value the derivative creator's original styles/ideas have, the less value the copying part of the original has.[20] In summary, when $e = 1$, the derivative creator is allowed to provide only the inferior copy of the original with the quality $q_d = 1 - s$. When $e = 0$, on the other hand, she can provide the derivative work adding all the new styles/ideas with the quality $q_d = 1$.

For the demand function of the derivative work, we assume $0 < \alpha_d < 1$, that is, the derivative work's market is smaller than the first original work's market. Then, the profit from the derivative work's market is given as

$$\pi_d = (1 - es)\alpha_d^2.$$

When $e = 1$, the publisher is assumed to hold the copyright of the derivative work completely and earns all the profit from selling reproductions of the derivative work. Thus, in our model, the copyright holder is able to exercise right with no transaction costs and poses complete bargaining power against the derivative creator. This assumption is for simplification, and the model can be easily extended to more realistic situation by setting license rate less than one.

[20]Without the second assumption, the derivative work's value can be given as $q_d = s(1 - e) + u, 0 < u < 1$. Although this specification may be more desirable to some of *dōjinshi*, it is not necessarily the case for most of them. Furthermore, describing the derivative work's value using two parameters makes having implications from the model quite hard.

3.2 The second original work

After the release of the derivative work, the publisher produces the second original work that is based on the first one with the quality $q_{o1} = 1$. It can be a sequel, spin-off, or remake to the first, and we assume no new investment is required for the production. However, when the publisher chooses $e = 0$ for the derivative work, it can add new styles/ideas s created by the derivative creator, which is not protected by copyright law since the law protects only expressions. Then, the quality of the second original work is given as the sum of the values of the first original work and new styles/ideas of the derivative creator if available, that is,

$$q_{o2} = 1 + s(1 - e).$$

For the demand of the second original, we specify $\alpha_{o2} = 1 - \theta(1 - e)$, where $0 < \theta < 1$ is the extent of negative externalities due to the free use of the first original work. The demand of the second original is affected by the free use of the first original because the second original is produced based on the first one such as using the same characters and/or story line. However, the extent of the negative externalities θ is assumed to be independent of the value of the derivative creator's new styles/ideas s because the original and derivative markets are independent. The taste of consumers in each market can be different, and thus it would be possible that the styles/ideas popular among the derivative work's consumers are not accepted by many of the original work's consumers. Then, the profit from selling reproductions of the second original work is give as

$$\pi_{o2} = \{1 + s(1 - e)\} \{1 - \theta(1 - e)\}^2 .$$

We are ready to consider the publisher's strategy. In the next section, we compare the optimal publisher's strategy and socially optimal strategy.

4 Publisher's profits and social welfare

4.1 Publisher's optimal licensing strategy

The publisher decides licensing strategy $e = \{0, 1\}$ that maximizes total profits from all the three works' markets. Since the profit from the first original's market does not depend on e, by defining $\pi(e) \equiv e\pi_d(e) + \pi_{o2}(e)$, the publisher's problem is given as

$$\max_{e=\{0,1\}} \pi(e) = e(1 - es)\alpha_d^2 + \{1 + s(1 - e)\}\{1 - \theta(1 - e)\}^2 .$$

When $\pi(0) = \pi(1)$, we set that the publisher chooses $e = 1$. Then, the publisher choose $e = 0$ when $\pi(0) > \pi(1)$, that is,

$$1 - \sqrt{\frac{1 + (1 - s)\alpha_d^2}{1 + s}} > \theta. \tag{1}$$

Since $\theta > 0$, if the inequality (1) is satisfied, the left-hand side of this equation needs to be positive. Then, α_d and s necessarily satisfy the following equation,

$$\alpha_d < \sqrt{\frac{s}{1 - s}}. \tag{2}$$

The inequalities (1) and (2) describe the condition where $e = 0$ maximizes the publisher's profits. First, if the publisher choose $e = 0$, the market size of the derivative work and thus licensing revenue from the derivative work should be small enough, and/or the quality value of new styles and ideas by the derivative creator should be large enough. Under such conditions, giving up licensing revenue from the derivative work can be profitable when the negative externalities from the derivative work is small enough since the publisher can increase the quality and thus the demand of the second original work. The results are summarized into the following proposition.

Proposition 1 *The publisher chooses not to control the derivative creator by licensing if (i) the size of the derivative market is small enough and/or*

the creativity of the derivative creator is large enough, and (ii) the negative externalities due to free-use of the original work is small enough.

The intuition of the proposition 1 is clear. The first part shows the condition that the benefit of not controlling the derivative creator is large. If the size of the derivative work's market is small, the license revenue from the market is also small. In addition to that, when the derivative creator adds large s to her work, it also enhances the second original work's quality a lot since the styles/ideas of the derivative work is freely available to the publisher. Similarly, the second part of the proposition 1 shows the condition that the loss of not controlling the derivative creator is small. If the publisher tacitly allows the derivative creator to add s, it may cause negative externalities to the second original's market. When the benefit is large and the loss is small, the publisher has an incentive to set $e = 0$.

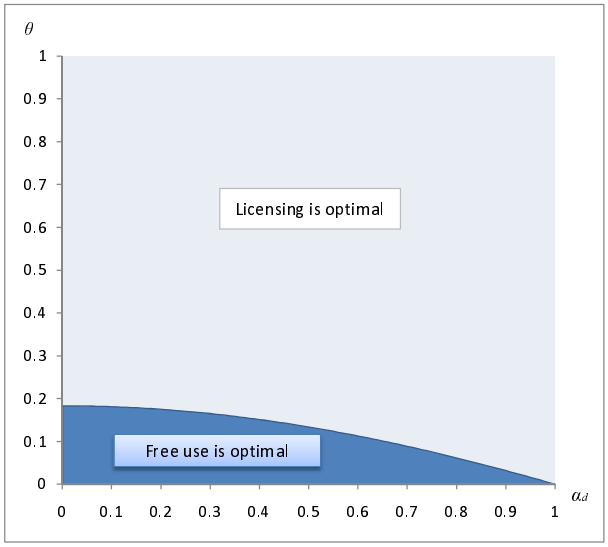

Figure 1: Publisher's Optimal Strategy

Figure 1 shows the intuition of proposition 1. It shows the inequality (1) in the $\alpha_d - \theta$ diagram. If the derivative creator is so creative that $s \geq 1/2$, the inequality (2) is always satisfied regardless of the size of the derivative

market because $s/(1-s) \geq 1$ for $s \geq 1/2$. Thus, only the second condition in proposition 1 is required for the publisher to choose $e = 0$ when $s \geq 1/2$. In Figure 1, we set $s = 1/2$. Notice that the area where $e = 0$ is optimal expands with the increase of s and shrinks with the decrease of s.

4.2 Social welfare and a comparison

The consumer and producer surpluses in each monopoly market of the content i are $CS_i = q_i\alpha_i^2/2$ and $PS_i = q_i\alpha_i^2$, respectively. The total surplus in each market is given as $W_i = CS_i + PS_i$, and we define the social welfare as $W \equiv W_{o1} + W_d + W_{o2}$. Since $\pi_i = q_i\alpha_i^2$, by using π_i, the total surplus in each market is rewritten as $W_i = 3\pi_i/2$. Therefore, $W = (3/2)\{1 + \pi_d + \pi_{o2}\}$. Let $W(e) \equiv \pi_d + \pi_{o2}$. When $W(0) > W(1)$ and thus $e = 0$ is socially optimal,

$$s\alpha_d^2 + (1+s)(1-\theta)^2 > 1.$$

By solving this inequality, the condition for $W(0) > W(1)$ is obtained as

$$1 - \sqrt{\frac{1 - s\alpha_d^2}{1+s}} > \theta. \tag{3}$$

Figure 2 shows the inequality (3) in the $\alpha_d - \theta$ diagram. The left-hand side of (3) is always larger than zero since $0 < 1 - s\alpha_d^2 < 1 + s$. Contrary to figure 1, the area where the free-use is socially optimal expands as the market size of the derivative work increases. When the size of the derivative market increases, its total surplus also increases. In this case, the free use strategy further increases the total surplus since the derivative works' quality under the free use strategy is higher than that under the licensing strategy.

For a comparison between the profits and social welfare maximizing strategies, notice that

$$\sqrt{\frac{1 - s\alpha_d^2}{1+s}} < \sqrt{\frac{1 + (1-s)\alpha_d^2}{1+s}}.$$

From the above equation, it follows that when θ satisfies (1), it also satisfies (3). The result is summarized into the next proposition.

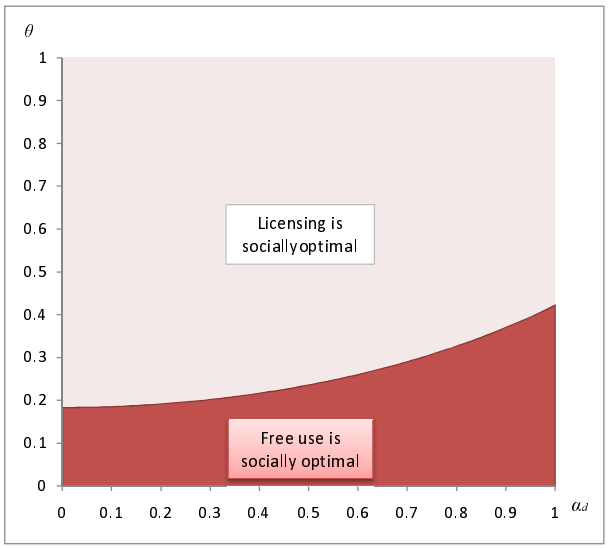

Figure 2: Socially Optimal Strategy

Proposition 2 *When not to control the derivative creator by licensing maximizes the publisher's total profits, it also maximizes the social welfare.*

The result is intuitive since the surplus in the derivative market does exist whether or not the publisher chooses licensing. When not controlling the derivative creator causes only small negative externalities, the strategy should be optimal for both the publisher and social welfare because it maximizes both the original and derivative works' qualities, which then increase the demands of both the original and derivative works.

On the other hand, when $e = 1$ maximizes the social welfare, it does not necessarily maximizes the publisher' profits. This is shown in figure 3, which overlays figures 1 and 2. The difference between the two conditions (1) and (3) becomes larger when α_d increases since the publisher has an incentive to control the derivative market because of the increased license revenue. Thus, when the derivative market becomes larger, the efficient licensing strategy may not be achieved even with small negative externalities.

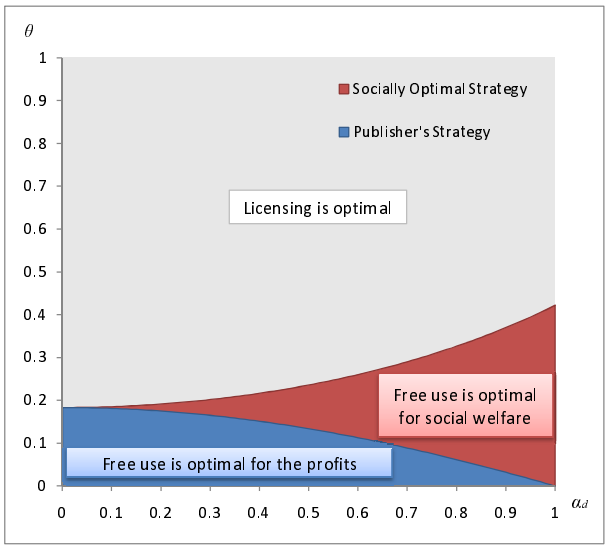

Figure 3: Publisher's Strategy and Socially Optimal Strategy

5 Conclusion

In Japan, the copyright holders of commercial anime and manga have ignored the infringement by the *dōjinshi* creators, who produce and sell the derivative works of the originals without official permission of the copyright holders. As Mehra (2002) points out, there can be several reasons for the copyright holders' behavior. Among the reasons, the following two would be especially important: (i) weak legal environment in Japan, and (ii) innovative contribution by derivative creators. The second one is a kind of user innovation that has been observed in many fields of manufacturing and services. In this sense, it can be said that the *dōjinshi* phenomenon in Japan is nothing new. However, it is not clear whether or not the copyright holders still ignore the infringement by the derivative creators when the legal and economic environment changes. What if the transaction costs of licensing decrease as a result of the judicial reforms of Japanese government? What if the opportunity for revenues from licensing to *dōjinshi* increase as a result

of further growth of the *dōjinshi* markets? The model of this paper answers those questions.

If the negative externalities from the free-use of original works are small enough, there is a possibility that the copyright holders benefit from new styles and ideas of the derivative works. Then, it can be optimal for the copyright holders to ignore the infringement by the derivative creators and to let them freely use the original works to drive new styles and ideas. Even if the licensing revenues from *dōjinshi* markets are large, ignoring the infringement still can be optimal for the copyright holders when the derivative creator's new styles and ideas are valuable enough.

Furthermore, the model reveals the relationship between the copyright holder's licensing strategy and social welfare. As well as commercial anime and manga markets, the *dōjinshi* markets also create surplus. Thus, when the negative externalities due to the free-use of the original work are small, allowing the derivative creator to freely use the original can be socially optimal. The analysis of our model shows that when the copyright holder lets the derivative creator freely use the original work, the free use is also socially optimal. Thus, it can be inferred that the Japanese current situation where commercial anime and manga markets coexist with the *dōjinshi* markets is socially optimal. An policy implication in a such situation is easily found: do nothing. The copyright holders could best know the extent of the negative externalities because they usually invest large money in marketing research to know their customers. If parties other than copyright holders such as government decide whether to litigate or not against copyright infringement, it can hart social welfare.

On the other hand, when the copyright holder controls providing the derivative work by licensing, the strategy may or may not socially optimal. Our model shows that when the derivative market grows, the copyright holder may choose socially inferior strategy because of large licensing revenue

from the derivative market. Since the *dōjinshi* markets have been largely growing in Japan, there is a possibility that the copyright holders may choose controlling derivative creators though it is not socially optimal. A remedy for this would be introducing the fair-use doctrine to Japanese copyright law. The fair-use may work to maximize social welfare if courts can rightly judge the extent of the negative externalities. An example would be Walt Disney Productions' suit in the late 1970s against Air Pirates, who published counterculture comic books depicting Disney cartoon characters (Bernstein, 1984; Mehra, 2002). The Ninth Circuit Court of Appeals concluded that the portrayal of Disney's Micky Mouse as engaging in promiscuous sexual activity and taking drugs did not suffice to qualify as fair-use despite the potential for parody. Many people around the world who loved the Disney's character would not have wanted to see him depicted in such ways. In that case, the court may have made a right decision that maximized social welfare.

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