society. Korean criminal law must respond to two apparently divergent needs. On the one hand, it must provide a “modern” criminal legal framework that protects citizens from state authority and frees criminal law from the legislation of moral norms. Yet at the same time, it must be a “post-modern” system that is able to swiftly respond to new kinds of social harms and protect citizens from such harms before they occur.

Comparative Analysis of Laws on Information and Tangibles in the U.S. and Korea from the Perspective of Transaction Cost Economics

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Abstract

For decades, legal scholars have debated whether and how much legal protection should be conferred on commercially valuable information. As a result, various ad hoc legislative solutions for information have been proposed, some of which have been adopted by most countries. Though necessary to promote the development of information technologies, legislation and its enforcement are social tools that take costs. Thus, it is also necessary to avoid devising and maintaining redundant and inconsistent laws. Transaction cost economics has been shedding light on providing bases for economizing legal tools. Based on the concept of the transaction cost, this Article purports to provide a theoretical ground for minimal and consistent laws on information: consistent not only among different laws on information, but also between laws on information and tangibles. Lawmakers should understand that the fundamental difference between laws on information and tangibles arises from the difference in transaction costs of internalizing externalities.

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I. Introduction

For the past twenty years, technologies handling information have developed at a speed that nobody had ever been able to imagine. The advent of computer technologies and the Internet has changed everything from ordinary life pattern to ways of research in universities. The change in technological environments was quickly followed, or even induced, by various forms of legal protections for producers of information. As a result, we are now facing inconsistent, under-or over-protecting statutes. Recently, Korean legal scholars began to emphasize the necessity and importance of understanding the relationship between basic laws and intellectual property laws.[1] The purpose of this Article is to provide a common theoretical ground for the legal protection of both information[2] and tangibles in Korea. To achieve this purpose, the Article comparatively analyzes the approaches to both information and tangibles in U.S. common law and Korean law.[3] Therefore, the analysis is two dimensional; first, laws on information and tangibles are comparatively analyzed, and second, U.S. common law and Korean law are comparatively analyzed. The comparative analysis between U.S. and Korean laws are necessary to understand laws on information in Korea because recent intellectual property legislation in Korea was under the influence of U.S. laws. The concepts of transaction cost economics, especially new institutional economics, are used in providing a common theoretical ground for laws on information and tangibles in the U.S. and Korea.

In part II, the concept of 'transaction costs' regarding the subject of this Article is

1) *See*, Chang-su Yang, "Intellectual Property Law from the Perspective of the Civil Code. [*minbeopeu gwanjeomeseo bon jijeokjaesangwonbeop*]," in Sang-Jo Jong, ed., *Lecture on Intellectual Property Law* [*jijeokjaesangwonbeop*] (Seoul: Hongmunsa, 1997), p. 46 (stressing the importance of understanding the Civil Code in understanding intellectual property laws.).

2) In this article, the term 'information' includes the information, which is not protected by law. Therefore, 'information' in this article consists of (1) information that is worth a right *in rem*, such as an invention, (2) information that is worth a right *in personam*, such as a trade secret, and (3) information that is worth no legal protection, such as individual or discrete data or facts.

3) The term 'intangible property' is commonly used in countries with common law system in discussing laws on information. However, in this Article, I use the term 'information' instead of 'intangible property,' because, in Korean legal system, 'things,' which are defined and governed by the Civil Code, include both tangibles and manageable intangibles, such as gas. Therefore, in my opinion, use of the term 'information' is more suitable for the analysis regarding legal protection of information in Korea than the term 'intangible property.' For more details on the discussion on the definition and nature of 'things' under the Civil Code, *see, infra* Ch. III. A. 3.

introduced. Part III is about the initial entitlement. The necessary conditions and factors reducing transaction costs in entitlement to tangibles are first discussed, then they are applied to entitlement to information. In part IV, the regulation on the utilization of values after the initial entitlement is discussed in the context of both information and tangibles. In discussing utilization of information, I focused on information protected by rights *in personam*, because information entitled with rights *in rem* is not much different from tangibles in its utilization. To develop my argument that legal protections for information and tangibles can be understood on a common theoretical ground, I first introduce relevant theories of transaction cost economics with examples of U.S. common law cases, and demonstrate that the same theories can apply to laws in Korea.

II. Transaction Costs

Before starting with the subject of entitlement to information, it is necessary to briefly introduce the concept and function of 'transaction costs',[4] because transaction costs decide who should be entitled,[5] how the entitled values should be exchanged after the initial entitlement,[6] and finally, transaction costs are "the sources of social, political, and economic institutions."[7] Together with transformation costs, transaction costs are a part of the total cost of production:

4) Professor Coase described the general concept of transaction costs and its importance in his foundational article, "The Problem of Social Cost," as:

> In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without costs.

Ronald H. Coase, The Problem of Social Costs, *Journal of Law & Economics*, Vol. 3 (1960), p. 15.

5) "Even when it is possible to change the legal delimitation of rights through market transactions, it is obviously desirable to reduce the need for such transactions and thus reduce the employment of resources in carrying them out." Ronald. H. Coase, *The Firm, the Market, and the Law*, (Chicago, IL: University of Chicago Press, 1988), p. 119.

6) This is the question of whether the initial entitlements should be protected by "bargain rule" or "no-bargain rule." *See generally*, Calabresi & Melamed, *infra* note 92. From the perspective of the exchange of values, this is also the question of who determines the price for the values exchanged, and when it is decided. If a bargain rule applies, the parties decide the price for the exchanged values before the transaction. If a no-bargain rule applies, the court determines the price for the exchanged values after the exchange. For more discussions on the exchange of values from the view of contract law, *see*, P.S. Atiyah, *The Rise and Fall of Freedom of Contract* (Clarendon Press, 1979), pp. 742-54.

> The total costs of production consist of the resource inputs of land, labor, and capital involved both in transforming the physical attributes of a good (size, weight, color, location, chemical composition, and so forth) and *in transacting-defining, protecting and enforcing the property rights* to goods (the right to use, the right to derive income from the use of, the right to exclude, and the right to exchange) (emphasis added).[8]

Professor North identifies two main sources of the costliness of transactions.[9] According to him, costliness of transactions comes from the costliness of measurement and enforcement.[10] First, it takes resources to measure the "diverse attributes of a good or service," from which utility is derived, and "additional resources to define and to measure rights that are transferred."[11] Second, a transaction takes the costs of policing and enforcing the property right.[12] Both measurement and enforcement costs arise from the fact that the parties to a certain transaction do not have, before and at the time of the transaction, all the necessary information for the transaction, and from the fact that "individuals have restricted ability to handle data and formulate plans."[13] In other words, the costliness of measurement and enforcement, and therefore, the costliness of transactions, originates from the costliness of information.[14]

What, then, does the existence of transaction costs signify in the context of entitlement, exchange of values, and the necessity of institutions and organizations? First, "[b]ecause with any property rights structure transaction costs are positive, rights are never perfectly specified and enforced; *some valued attributes are in the public*

7) Douglass C. North, *Institutions, Institutional Change and Economic Performance*, (New York, N.Y.: Cambridge University Press, 1990), p. 27.

8) *Id.* p. 28.

9) Until Professor North, [n]either Coase nor many of the subsequent studies of transaction costs have attempted to define precisely what it is about transacting that is so costly. *Id.*

10) *Id*. pp. 28-33. In the context of a contract, the elements of transaction costs consist of "search costs," "bargaining costs," and "enforcement costs." Robert Cooter & Thomas Ulen, *Law and Economics* (Reading, MA: Addison-Wesley Longman, Inc., 2000), p. 88.

11) North, *supra* note 7, pp. 28-29.

12) "[O]ne cannot take enforcement for granted. It is (and has always been) the critical obstacle to increasing specialization and division of labor. *Id*., p. 33.

13) Eirik G. Furubotn & Rudolf Richter, *Institutions and Economic Theory: The Contribution of the New Institutional Economics*, (Ann Arbor, MI: University of Michigan Press, 1998), p. 4.

14) "[T]he costliness of information is the key to the costs of transacting." North, *supra* note 7, p. 27. One of the

domain and it pays individuals to devote resources to their capture."[15] In other words, the process of entitlement itself is an activity incurring costs, and this costliness of entitlement makes entitlement imperfectly specified and leaves the unspecified parts of values in the public domain:

> Because of specification costs, it is clear that some property rights cannot be fully assigned. For example, there are inherent difficulties (and major costs) in any attempt to allocate rights in the atmosphere or the open seas. But, in the absence of appropriate rights specification, external effects result. In effect, the specification problem of individual property rights is directly related to the problem of "internalizing" externalities. An externality is said to appear in situations in which one individual's economic position is affected by what other individuals do with respect to consumption or production.[16]

Therefore, whether a certain value can be the subject of entitlement depends on the costs of specification or measurement, and of enforcement. Secondly, even if a party was entitled to an externality, so that there is now a market for the exchange of the externality for values, the positive transaction costs raise another problem. Generally, parties to entitlements can benefit through exchange after the initial entitlement, because it is possible that entitlement to a value is not granted to the person who values it the most. Therefore, "it is always possible to modify by transactions on the market the initial legal delimitation of rights."[17] However, as mentioned above, exchange of values in markets also entails transaction costs. Taking transaction costs into account, there will be a rearrangement of initial entitlements for more efficient use of resources, only if both parties think in advance that there will be gains from the exchange; thus, there will not be any transaction if the transaction costs are larger than the gains from the exchange.[18] This costliness of entitlements and transactions makes institutions

judicial techniques, which were developed due to the costliness of information in making law *ex-ante* "to the last detail," is the use of "reasonableness." Furubotn & Richter, *supra* note 13, p. 17. For the discussion on 'reasonableness,' *see infra*, Ch. III.B.5.

15) North, *supra* note 7, p. 33.

16) Furubotn & Richter, *supra* note 13, pp. 89-90.

17) Coase, *supra* note 5, p. 114.

18) *Id.* p. 115.

matter.[19] Costly transactions can generate negative gains from trade. But, institutions can reduce transaction costs by reducing uncertainty, which accounts for high information costs, and can enhance social wealth by increasing the gains from trade.[20] In cases of high transaction costs in the market, there are substitutes for the market that can reduce transaction costs. For example, when it is too costly to set the price for an exchange of values prior to a transaction in the market, it is possible to exchange values first, and then set the price of the values in court after the exchange. For another example, if a firm finds it too costly to search and negotiate to purchase necessary parts in the market for its final product, the firm can use its own organization rather than the market; it can decide to produce the necessary parts within the firm. I will summarize this part on transaction costs and its impact on entitlements by quoting Professor Coase:

> [I]n choosing among social arrangements within the context of which individual decisions are made, we have to bear in mind that a change in the existing system which will lead to an improvement in some decisions may well lead to a worsening in others. Furthermore, we have to take into account the costs involved in operating the various social arrangements (whether it be the working of a market or of a governmental department) as well as the costs involved in moving to a new system. In devising and choosing among social arrangements we should have regard for the total effect.[21]

III. Initial Entitlement as a Tool for Internalization

A. Initial Entitlement to Tangibles

1. Necessary conditions for entitlement

The first question with regard to entitlements is why they are necessary at all.[22]

19) North, *supra* note 7, p. 12.

20) *Id.* p. 34.

21) Coase, *supra* note 5, pp. 155-56.

22) It will be helpful to clarify the usage of the terms, "entitlement" and "property rights," in this article before developing the discussion on entitlement. Fisher said, "Lawyers distinguish between property rights and personal

This issue is often disregarded when rights and duties are discussed, but it is central to any discussion on whether a new entitlement is to be granted to a certain entity for a certain purpose. The starting point is the notion that entitlement is an "instrument of society" for internalization.[23] The necessity for new entitlements generally begins with the change of the relative prices of goods or services due to the emergence of "new knowledge" or "new ways of doing something."[24] Then, people in the society try to adjust to new cost-benefit possibilities.[25] In the course of and due to the adjustments, externalities occur, to which existing institutions are "poorly attuned."[26] As a result, a new form of entitlement can emerge "to internalize externalities."[27] Professor Demsetz cited an example of the emergence of property rights in American Indian tribes (the Indians of the Labrador Peninsula) as follows:

> [T]he advent of the fur trade had two immediate consequences. First, the value of furs to the Indians was increased considerably. Second, and as a result, the scale of hunting activity rose sharply. Both consequences must have increased considerably the importance of the externalities associated with free hunting. The property right system began to change, and it changed specifically in the direction required to take account of the

rights; but, to the economist, all rights are proprietary...logical convenience is served by adopting the broader definition of wealth, which includes human beings even when free, and by adopting also a coexistensively broad definition of property so as to include all rights known to jurisprudence. This being premised, it follows that every right is a property right....Property rights, then, consist of rights to the uses or services of wealth." Irving Fisher, *The Nature of Capital and Income*, (New York, N.Y.: The Macmillan Company, 1906), p. 20.

In this article, I use 'entitlement' to mean the economists' usage of 'property rights,' while property rights mean that, in the case of the reduction of entitled values, the state enforces the reduced value back into the private domain of the 'property right' holder. This concept of property right has two premises. First, " the owner is free to exercise the rights over his or her property." Second, "others are forbidden to interfere with the owners exercise of his rights." Cooter & Ulen, *supra* note 10, p. 74. The third premise would be that the state is the most effective and efficient third party to police and enforce property rights due to its scale of economy. But, in this article, the qualification of the state as the most effective and efficient third party to enforce property rights is assumed. For more details, *see*, North, *supra* note 7, pp. 54-60.

23) Harold Demsetz, " Toward a Theory of Property Rights," *American Economic Review*, Vol. 57 (1967), p. 347.

24) *Id.* p. 350. The state can also change cost-benefit possibilities by entitlement in order to allocate resources to a specific area.

25) *Id.*

26) *Id.*

27) *Id.*

> economic effects made important by the fur trade.[28]

A new form of entitlement system, a temporary and seasonal allotment system, emerged to prevent overproduction of fur, and this entitlement was enforced by retaliation in the case of a violation.[29]

As the above example shows, changes in relative prices are necessary to bring about new entitlements. Relative price change, however, is not sufficient. The grant of a new entitlement should also be "worthwhile to incur the costs of devising such rights."[30] In other words, "the gains of internalization [should be] larger than the cost of internalization."[31] Professor Demsetz makes this point by comparing private ownership of land of the Indians of the Labrador Peninsula with that of the Indians of the American Southwest plains:

> Two factors suggest that the thesis is consistent with the absence of similar rights among the Indians of the southwestern plains. The first of these is that there were no plains animals of commercial importance comparable to the fur-bearing animals of the forest... The second factor is that animals of the plains are primarily grazing species whose habit is to wander over wide tracts of land. The value of establishing boundaries to private hunting territories is thus reduced by the relatively high cost of preventing the animals from moving to adjacent parcels. Hence both the value and cost of establishing private hunting lands in the Southwest are such that we would expect little development along these lines. The externality was just not worth taking into account.[32]

2. Factors reducing transaction costs of exclusion

What is the cost of internalizing by entitlement? The cost of internalization is the

28) *Id.* pp. 351-53. Professor Demsetz excerpted this example from Eleanor Leacock, "The Montagnes "Hunting Territory" and the Fur Trade," *American Anthropologist*, Vol. 56, and Frank G. Speck, "The Basis of American Indian Ownership of Land," *Old Pennsylvania Weekly Review*, (January 16, 1915), pp. 491-95.

29) Demsetz, *supra* note 23, p. 352.

30) North, *supra* note 7, p. 51.

31) Demsetz, *supra* note 23, p. 350.

32) *Id.* p. 352-53.

cost of exclusion; i.e., the social cost to prohibit those other than the right holder from accessing the object of entitlement. The cost of granting entitlement can thus be called the "transaction cost of exclusion."[33] Taking territorial private rights as an example, the transaction costs of entitlement comprise the costs of measuring the value of the land, negotiating for the division of the hunting territories, monitoring the invasion of the territories, and enforcement.[34]

A new cost-benefit possibility can emerge not only when a new opportunity for benefit such as the "fur trade" arises, but also when costs of a transaction are reduced. First, in the example of the Indian fur trade, the entitlement was enforced by family retaliation.[35] However, if the cost of enforcement decreased, more entitlement could be granted. This reduction in the enforcement cost justifies the state's enforcement of entitlements. That is, the state, as a third party, has "immense scale economies in policing and enforcing" and in using "coercion to enforce" entitlements.[36] Second, technological development can "lower measurement costs and encourage precise, standardized weights and measures."[37] Third, the "formalization of constraints (which became possible with the development of writing)" can lower transaction costs by reducing uncertainty caused by increasing complexity of societies.[38]

3. Entitlement to tangibles in Korea

Part II of the Civil Code basically governs property rights in Korea.[39] Article 98 of

33) Though "a rule of open access causes overuse of a resource, ... private property rights require costly exclusion of nonowners." Cooter & Ulen, *supra* note 10, p. 123.

34) North, *supra* note 7, pp. 27-29, 32-33; Demsetz, *supra* note 23, pp. 354-59. Costs of transferring entitled objects would also be included in the transaction costs in the case of the modification of initial entitlement.

35) Demsetz, *supra* note 23, p. 352.

36) North, *supra* note 7, p. 58. Here, "[t]hird party enforcement means the development of the state as a coercive force able to monitor property rights and enforce contracts effectively." And the state, as a third-party, is supposed to be impartial. But, the reality is that there is a possibility that "those who run the state will use [the coercive] force in their own interest at the expense of the rest of the society." *Id*., p. 59. This problem, associated with the concept of a representative body, can arise on the stage of deciding entitlement in the governments.

37) *Id*. p. 46.

38) *Id*. While having its own transaction costs, entitlement also reduces transaction costs.

39) Civil Code [*minbeop*] (Law No. 471, February 22, 1958, lastly revised on December 13, 1997, as Law No. 5454), Arts. 185-372.

the Civil Code defines 'things,' which are the object of the right conferred by the Act, as "corporeal things, electricity, and other natural forces, which can be managed."[40] In other words, the things under the Civil Code consist of 'corporeal things' and 'incorporeal things.' Corporeal things mean "materials that have a certain shape, occupy space, and can be detected by five human senses."[41] Incorporeal things mean objects that have no shape, such as energy and information. However, not all incorporeal things can be 'things' under the Civil Code. Only 'manageable natural forces' are things under the Civil Code. Therefore, since incorporeal things under the Civil Code include only natural forces, they do not include information.[42] And those natural forces should be manageable.

But what does 'manageable' mean? I argue that manageableness means the status that, considering the current level of technologies, the cost of exclusion from an object is affordable for the state and entitled individuals. The definition of manageableness and the reason why it is required can be found in 'transaction costs of exclusion.' As mentioned above, "the grant of a new entitlement should be worthwhile to incur the costs of devising such rights." In other words, the social gains from entitlement should be larger than the cost of the entitlement. The cost of entitlement mainly consists of the cost of exclusion. And, the cost of exclusion includes the costs of specifying the object of the entitlement, of measuring its value, of monitoring whether somebody damages the object, and of enforcing the right in the case of violation. Only when the cost of an exclusion from an object is smaller than the gains from the exclusion, it becomes socially meaningful to grant a right to the object. Most natural forces can be used for the good of a society. Therefore, the most important question when society considers entitlement to a type of natural forces is how cheaply the state and the entitled individual can exclude others from the natural force, considering the current level of technology. Article 98 of the Civil Code takes 'electricity' as an example of a manageable natural force. Though electricity had great potential values, it was not a manageable natural force until the invention of electric wires, the standardized

40) Civil Code, Art. 98.

41) Sang-Yong Kim, *General Provisions of the Civil Code* [*Minbopchongchik*] (Seoul: Beopmunsa, 1993), p. 314.

42) The reason that the Civil Code does not include information as a 'thing' is arguably that the Civil Code of Korea originates from the 19th century Civil Codes of Germany, France and Switzerland. Chang-Su Yang, *supra* note 1, p. 46.

measure of volt, and electricity meters. The 'volt' and electricity meters made it possible to measure quantity and value of electricity, and the electric wires enabled to monitor who steals electricity. Through those technologies, the cost of exclusion from electricity became much lower, and so manageable.

Article 98 of the Civil Code does not require manageableness for corporeal things to be eligible as things. However, the manageableness should be interpreted to be required for corporeal things.[43] The costs of exclusion, that is, the costs of measurement, monitoring, and enforcement of most corporeal things, due to their tangibleness, are relatively low, and so usually manageable. It is why the Civil Code does not specifically require manageableness for corporeal things. However, some corporeal things, the cost of exclusion from which is not affordable, and so not manageable, cannot be things under the Civil Code. Examples of such unmanageable corporeal things are the Sun, the Moon, and planets. But, as technologies develop, such unmanageable corporeal things may become manageable.

4. Entitlement creating individual incentives

According to the above theories on entitlement, when new cost-benefit possibilities emerge, "[i]t is necessary... to balance the benefit from delineating property rights against the costs."[44] This approach can provide public policy makers with a relatively concrete basis, when deciding whether a new form of entitlement should be granted. It can help them predict and prepare for future entitlements to deal with possible conflicts that might arise from present technological developments reducing transaction costs considerably.[45] However, the state can also use entitlement to reduce transaction costs in a specific area, by reducing an individual's risks in investing resources in that particular sector, or by increasing an individual's risks in investing resources to take benefits from that sector.[46] Furthermore, because "incentives are the underlying determinants of economic performance," entitlement is used to allocate scarce

43) Kim, *supra* note 41, p. 315.

44) Cooter & Ulen, *supra* note 10, p. 120.

45) For example, policy-makers can "[predict] that the invention of barbed wire, which lowered the cost of boundary maintenance, would promote the privatization of the public domain ... [, or]... that a property rights will be created in the electromagnetic spectrum when broadcasters begin to interfere with each other." *Id*., p. 124.

46) North, *supra* note 7, pp. 47-48. This kind of state policy would be used when the state wants more production in the specific area in question.

resources into more valuable uses by influencing individual incentives. First, once it is determined that it is socially desirable to produce X, the state can reduce individual risks in producing X by entitlement reducing individual costs to produce X, by increasing individual benefits from producing X, or both. Second, once it is determined that it is socially harmful to produce Y, the state can increase individual risks in producing Y by entitlement increasing individual costs to produce Y, by reducing individual benefits from producing Y, or both. In the example of American Indian tribes, it was determined that the current level of production of fur was not desirable too high at the moment, and the reduction of fur production was necessary. By entitlement, the individual cost of producing fur was increased; now an Indian hunting in others' territories should consider the cost of possible retaliation, and hunting in his own territory is done at his own expense. To reduce these costs, individual hunters will hunt less than before the entitlement.

One of the critical questions when establishing entitlement is how much incentive is necessary. The answer to this question depends on how beneficial or harmful a certain activity is to society. The more beneficial an activity is to society, the more necessary the incentive to participate in that activity, and accordingly, stronger protection would be required. In contrast, the less beneficial an activity is to society, the less necessary the incentive to do the activity, and accordingly, weaker protection is required. The same strategy in entitlement can also apply to the discouragement of socially harmful activities.

In this section, two cases of entitlement were shown. The first case was where new cost-benefit possibilities generate entitlements. In the second case, entitlement was granted to generate new cost-benefit possibilities, and the state used the entitlement to reduce transaction costs of production or exchange in a specific area. But in both cases, the right to exclude was a common means to achieve these goals. In the next section, it will be demonstrated that the same theories on entitlement to tangibles apply to entitlement to information.

B. Initial Entitlement to Information

1. Internalizing benefits and its limits

Professors Cooter and Ulen discuss "special problems in defining property rights in

information":

> On the demand side, consumers are uncertain about the utility of information because it is difficult to determine its value until one has it. But consumers cannot have information until they have paid for it. Yet they cannot know how much to pay for information until they have determined its utility by having it. There is no easy way into this circle. The problems on the supply side are just as formidable. Information is costly to produce, and yet it costs relatively little to transmit. Thus, it is extremely hard for anyone who has devoted resources to the production of information to appropriate its value through the sale of that information. This is because the instant the producer sells the information to one consumer, that consumer becomes a potential competitor of the original producer, owing to the low cost of transmitting information. Consumers desire to become "free riders" for information, paying no more than the cost of transmission for the commodity. ... These considerations suggest that the unregulated market will produce suboptimal amounts of information, ... [a]nd this, in turn, suggests the need for governmental intervention in the market for information.[47]

The entitlement to information involves the same kind of problem as the entitlement to land in the story of "Hunting Territory and the Fur Trade,"[48] in the sense that the problem in both cases is caused by externalities. That is, the producers of beneficial or harmful effects are not always the ones who are influenced by the effects. In contrast to the entitlement to the hunting territory, however, the entitlement to information starts from the underproduction (or, as is in the above quotation, *suboptimal* production) of the information.[49] In the case of the entitlement to the hunting territory, the entitlement is designed to internalize the cost of utilizing land into the decisions of a party using it. But the purpose of the entitlement to information is to

47) *Id.* p. 109.

48) Demsetz, *supra* note 23, pp. 350-53.

49) Considering the huge value of, demand for, and considerable research and development costs of information in society, a case of the overproduction of information is hardly conceivable where no entitlement to information is granted.

internalize the benefit from information in the decision-making of a information producer.

By internalizing positive externalities, or external beneficial effects, a greater (or possibly optimal) amount of information can be produced.[50] In other words, the beneficial effect of the innovation would be internalized into the decision of the innovator by internalizing the cost of using the information into the decision of the potential utilizers of the information other than the innovator.[51] On the individual level, or from the perspective of an individual's incentive to innovate, one would innovate as long as one expects that benefits to him from his information will exceed his opportunity costs of innovation. On the social level, the question is whether the "gains from internalization"[52] would be bigger than the costs of internalization. More concretely, the question with regard to the cost of internalizing benefit from information is how cheaply a certain kind of information can be measured and monitored, and how cheaply the entitlement to the information can be enforced.[53] In other words, lawmakers should consider the same point when they determine entitlement to an object in the same way, whether it is corporeal things, natural forces, or information. If the costs of entitlement are bigger than the gains from the entitlement, society should not grant entitlement to information, unless the social policy is to protect the interests of a certain class. Or, if the society has several types of entitlements available, it should choose the one, the gains from which exceed the

50) Of course, the information, which would be produced, is the first generation innovation. Entitlement to the first generation innovation can increase the cost of improving it. Therefore, in determining the entitlement to information, consideration should also be given to the impact of the entitlement on the decision of improvement.

51) "[I]n economic exchange patent laws and trade secret laws are designed to raise the costs of those kinds of exchange deemed to inhibit innovation." North, *supra* note 7, pp. 47-48.

52) Demsetz, *supra* note 23, p. 348.

53) Therefore, the propertization of information needs reduction in the transaction costs of measuring and enforcement by making the information concrete and specific. Judge Posner makes this point:

> [I]f ideas as such, as distinct from the sorts of *concretely embodied ideas* protected by the patent and copyright laws, could be patented or copyrighted, the scope of, and difficulty of determining, infringement would be excessive.

Richard A. Posner, *Economics of Justice* 243 (Cambridge, MA: Harvard University Press, 1983), p. 243 (emphasis added). *See also*, Nuno T.P. Carvalho, "Unilateral Patent Misuse: A Comparative Study of U.S., E.C. and Brazilian Patent and Antitrust Laws" (J.S.D. diss., Washington University, 1993), pp. 4-6 (suggesting that "the primary function of the patent system" is "to provide society with a tool for the efficient measurement of an inventions value, thus reducingtransaction costs").

costs.[54]

Here are the limits of the entitlement to information and of the exercise of the right to information. The purpose of entitlement to information is to produce the optimal amount of information in and for society, and not merely to give more benefits to the individual innovator. Internalization of more benefits into the decision of an innovator is just a "social instrument" to increase the amount of information production in society to the optimal level. Therefore, if the amount of a certain kind of information has already reached an optimal level, or providing more benefit to the innovator is not likely to lead to more production of information,[55] any entitlement or stronger entitlement to the kind of information *should not* be granted. This issue of "minimal necessary entitlement" to information for any given level of benefit to the society is related with the optimal length of the entitlement. And of course, if the social cost of entitlement is larger than the social benefit from the entitlement, the entitlement *should not* be granted.

2. Secrecy reducing transaction costs

As Professors Cooter and Ulen suggest, the major obstacle for the society in granting entitlement to information is the huge cost of exclusion.[56] However, technological developments or legal devices can reduce the cost of exclusion enough

To avoid confusion with regard to reducing transaction costs, "it is important to note ... that the function of formal rules is to promote *certain* kinds of exchange but *not all* exchange. ... [I]n economic exchange patent laws and trade *secret* laws are designed to raise the costs of those kinds of exchange deemed to inhibit innovation, as well as to reduce the transaction costs of exchanges which promote innovation." North, *supra* note 7, pp. 47-48. The former aspect (raising costs) can be understood as the means of the latter aspect (reducing costs).

The costliness of entitlement to information can be better understood in the continuum of solid - liquid - gas - information, rather than in the tangible-intangible dichotomy. As it goes from solid to information, the cost of internalization would generally go up, and this has been the order of the entitlement in history. As new technique has been developed, which can reduce the cost of internalization, the entitlements also have been given to liquid, gas, and information. Among the solid objects, entitlement was first granted to the smaller and more portable objects. *See*, Demsetz, *supra* note 23, p. 353 n.7. And this continuum can help understand better the nature of the right of privacy.

54) "The choice between [secrecy and intellectual property] depends on a weighing of relative costs and benefits in particular circumstances." Posner, *supra* note 53, p. 242. For the discussion on the choice between rights *in rem* and *in personam*, *see* part III..B.4.

55) "Where information is not a product of a significant investment, the case for protection is weakened." *Id.* p. 244.

to grant entitlements to certain information.

In the case of entitlement to land, an individual entitled to a piece of land can monitor who trespasses his private territory, at relatively low costs. He can further lower the monitoring cost by building a watchtower or by fencing his territory. However, the most ideal but unreal situation with regard to monitoring costs is to ensure that people do not know the existence of his land. In that case, not only the monitoring cost but also the enforcement cost is zero. This situation is not plausible in the case of real estate, but in the case of portable objects such as a jewel, it can often be observed that people entitled to the jewel hide the fact that they own it; they *take precautions or make efforts to keep information secret.*

In the case of entitlement to information, once people access the information, the right holder cannot exclude them from possessing the information. All that the right holder can do is to exclude others from utilizing the information. In order to exclude others from utilization, the innovator should monitor all people who have accessed the information, to see whether they utilize the information. However, this is prohibitively costly. Such exclusion can be granted only to information that is presumably so valuable to society that the benefit from the exclusion exceeds the cost of exclusion, through such means as the Patent Act.[57] Beneficial externalities from information without any legal protection are ubiquitous. Therefore, a rational innovator without any entitlement to his information would, in the first place, try to keep people from knowing the existence of the information as such or at least from accessing the information. That is, he would keep secret the information or the existence of the information. In this sense, secrecy can be called a measure that reduces both an individual's and the state's costs of monitoring and thereby reducing the cost of internalizing the beneficial effect from the information.[58]

56) Of course, the internalization can also be achieved by allowing others to access the information, as well as by prohibiting them from accessing the information. In most cases, the internalization canbe done by prohibiting others from accessing the information. Information producers' costs for research can be rewarded by enhanced reputation, among other means. And the scientist can have the benefit of enhanced reputation by allowing people to access the result of his research. In this case, the problem of the underproduction of information would not occur from the first in the sense that the innovator in question would have created the information whether there was any entitlement.

57) Patent Act [*teukheobeop*] (Law No. 950, December, 31, 1961, lastly revised on September 7, 1999, as Law No. 6024)

58) "[S]ecrecy is an important social instrument for encouraging the production of information, especially in settings where the formal rights system in intellectual property is undeveloped." Posner, *supra* note 53, p. 243.

3. Property reducing transaction costs

The innovator can keep his information secret by using the exclusivity of his property. That is, the innovator can prohibit people from accessing the information by utilizing physical security measures.[59] Taking advantage of property in keeping information secret makes the monitoring cost much cheaper. What the innovator has to do now is to monitor the access of other people to the property. But, simply storing information on an innovator's property is not enough to get the entitlement to the information. The innovator must store his information on his property in a way that reduces the monitoring and enforcement costs enough for the state to identify a second comer and require him to pay for the utilization of the information. For example, a chemical company's construction site of a new plant that contains information on a new process for chemical production does not have any fence around it, and so all the people passing by the site can access the information from outside the company's property.[60] In this case, even though the information is put inside the company's property, the company cannot be granted any entitlement to the information, because the state

The secrecy requirement for the trade secret protection can be understood in this context. Unfair Competition Prevention and Trade Secret Protection Act [*bujeongkyeongjaengbangjimit-yeongeopbimilbohoe-gwanhanbeopryul*] (Law No. 911, December 30, 1961, lastly revised on December 31, 1998, as Law No. 5621), Art. 2(2). Secrecy is not the source of the value of the information in question, rather it enables the state to *afford* the trade secret protection. Without secrecy, the information would still have value. But, without secrecy, most of information would not have *commercial* value. Secrecy, together with innovators' precautions to keep information secret, "confer[s] an actual or potential economic advantage on" the innovator, and make others difficult or costly... to acquire [the information] without resort to the wrongful conduct. RESTATEMENT (THIRD) OF UNFAIR COMPETITION? 39 cmt. f (1995). Therefore, the requirement of secrecy reduces the transaction cost of monitoring and enforcement of rights *in personam* by making it possible and easier to decide *against whom should the right be enforced and who should pay for the utilization of the information to give incentives to innovate*. The third requirement, reasonable efforts to keep the information secret, also serves to reduce the measurement and monitoring cost, and even to show the commercial value of the information, as an evidence for courts in determining the existence of a trade secret. *Id.* 757 cmt. b.

59) However, the fact that a certain information is in somebody's property does not necessarily mean that the information is secret. For example, there can be a flower in somebody's garden, which can be observable from the streets. The fact that the flower is in the property does not mean the secrecy of the information that the owner of the garden also owns the flower secretly. The point is that, to keep information secret, the innovator should do more than simply put the information in his property. The innovator also needs to do something more than that. He should make *efforts* or take *precautions* to keep the information from being recognized by people outside his property.

60) RESTATEMENT (THIRD) OF UNFAIR COMPETITION 43 cmt. b, illus. 2 (1995). And this illustration is based on the result in Interrox America v. PPG Industries, Inc., 736 F.2d 194 (5th Cir. 1984). *Id.* reporters' note, cmt. b.

cannot afford to enforce the entitlement to the information against all people who pass by the site. However, if the site has fences, which keep its information from being observed, and if the construction site is photographed by a company's competitor from the air, outside the company's property, the entitlement to the information can be enforced against the photographer.[61] In this case, the company's precautions to make fences around its construction site makes it possible to distinguish a second comer, against whom the state can efficiently afford to enforce payment for the utilization of the information. As long as there are only few photographers taking information from the air, the company would not have to take such precautions as maintaining a roof over the construction site.[62] But if there were so many flyers above the construction site that it becomes impossible to distinguish information-takers from non-takers, or to enforce information rights against all the flyers, it might be *reasonable* to require the company to take the precautions of maintaining a roof to get the entitlement to its information, if the information is worth the cost. Therefore, by prohibiting certain means of access to property as illegal *per se*, or tortious, rather than by excluding all people from the information itself, the law can effectively prevent access to the information at lower and so affordable costs.[63]

4. Rights *in rem* and *in personam* to information in Korea

There are two different forms of entitlement to information in Korea: rights against unfair competition and property rights. Rights against unfair competition are granted by the Unfair Competition Prevention and Trade Secret Protection Act (UTA). An example of information, to which property rights are granted, is the "highly advanced

61) *Id*. cmt. c, illus. 3 (1995). This illustration is taken from the facts in E.I. duPont deNemours & Co. v. Christopher, 431 F.2d 1012 (5th Cir.1970), *cert. denied*, 400 U.S. 1924. *Id*. reporters' note, cmt. b (1995).

62) The court said:

> [W]e need not require the discoverer of a trade secret to guard against the *unanticipated, the undetectable, or the unpreventable* methods of *espionage now available*.... 'Improper' will always be a word of many nuances, *determined by time, place and circumstances*.

E.I. duPont deNemours & Co. v. Christopher, 431 F.2d 1012, 1016-7 (5th Cir.1970) (emphases added). The expressions "unanticipated, undetectable and unpreventable"—all of them can be interpreted as "rare" or "not likely to happen," and so as small number of cases which can be distinguished, and against which entitlement can be enforced.

63) By proclaiming that a certain type of behavior is tortious *per se*, the society can save the cost of analyzing each case to see whether the access was beneficial or harmful to the society, so that it should be prohibited or not.

creation of technical ideas utilizing rules of nature," that is, invention.[64] The right against unfair competition excludes only the party who accesses or utilizes the information by means not allowed by law. For example, a person shall not utilize another's trademark, which is widely known in Korea, in the way that such utilization causes confusion with another's goods.[65] And, a person shall not acquire another's "trade secrets by theft, deception, coercion or other improper means, or subsequently using or disclosing the improperly acquired trade secrets."[66] But property right excludes all people, except those entitled to the information, from utilizing the information. For example, "a patentee shall have the exclusive right to work a patented invention both commercially and industrially."[67] In other words, a right against unfair competition is a right against a person (right *in personam*), and a property right is a right against all the people, i.e., against the world (right *in rem*). The difference represents the difference in the cost of measuring and enforcing the entitlement to the information. Entitlement against a person would give potential innovators less incentive to create information than entitlement against the world, but more incentive than no entitlement at all.[68] However, entitlement against the world takes much larger cost to measure and enforce than entitlement against a person, and therefore should be granted only to information with larger benefits to society.[69] For example, suppose a society where only five people live, among whom only one is an innovator. And assume that the social cost of entitlement to information against a person is $100 and that only one person at a time attempts to utilize the innovator's information without his consent. Assuming that the society needs more innovation, only the information that is worth more than $400 can be granted entitlement against the world. If the social value of the information is less than $100, there would and should be no entitlement at all. If the social value of the information is worth between $100 and $400, the information can be granted entitlement against a person.

Under the same entitlement regime of rights *in personam*, it is possible to devise

64) Patent Act, Art. 2(1).

65) UTA, Art. 2(1)(i).

66) *Id.* Art. 2(3)(i).

67) Patent Act, Art. 94(1).

68) Right to information *in personam* can be understood as complementary to right to information *in rem* "aimed at raising... private rate of return." Douglass C. North, *Structure and Change in Economic History*, (New York, N.Y.: Norton, 1981), p. 173.

69) As Judge Posner points out:

legal tools to specify new conditions for the prohibition of utilizing information and to internalize more benefit from the information to the innovator. In the above example, if a certain kind of information is worth between $200 and $400, the law can prohibit some, but not necessarily all people, who did not themselves acquire the information of the innovator without his consent, from utilizing the information. For example, the law can prohibit a person from utilizing information of an innovator, even though the person did not acquire the information directly from the innovator, if the person "acquired with knowledge that an act of improper acquisition has occurred in connection with the trade secrets or lack of such knowledge by gross negligence."[70]

5. Reasonableness reducing costs of entitlement to information *in personam*

As shown in part II, the costliness of entitlement arises from bounded rationality and incomplete information of human beings, which results in gaps between the law and reality:

> Several thousand years of human history have made it clear that a lawmaker, however dedicated and ambitious, must accept incompleteness in any fabricated order. All of the contingencies of real life cannot be anticipated *ex ante*. Thus, a rational law maker does not try to regulate everything to the last detail. Rather, he recognizes the wisdom of leaving reasonable gaps in his design.[71]

If lawmakers attempted to fill the gap before legislation by collecting all of the information necessary to predict every possible situation with legal significance, they could never make a law. One of the legislative techniques to fill the gap between the law and reality is the requirement of 'reasonableness.'[72] One example is the requirement of reasonable efforts to keep information secret' in the UTA.[73] In the

> [T]he costs of enforcing a property right in information would often be disproportionate to the value of the information to be protected: the patent system could not be used to protect a popular hosts dinner recipes.

Posner, *supra* note 53, p. 243.

70) UCTA, Art. 2(3)(ii).

71) Furubotn & Richter, *supra* note 13, p. 17.

72) *Id.*

73) UTA, Art. 2(2).

context of right to information *in personam*, the right would be enforced if it is reasonable under the circumstances. However, the concept of 'reasonableness' is a very vague one, and more detailed criteria are necessary for the application of reasonableness. I argue that the reasonableness in the enforcement of the right *in* personam to information should also be determined in the context of the optimal production of information for consumer welfare. And I argue that, for the right to information *in personam* to be enforced, first, the state should be able to afford the enforcement. This is the question of what the reasonable precautions would be, which would reduce the transaction cost of enforcing a right *in personam* to information down to the level that the state can afford its enforcement. Second, society should need more innovation of the kind in question than the current level, and there should be no other ways to compensate costs of innovation without sacrificing competition. In other words, the necessity of entitlement *in personam* to information is one of the necessary conditions to make the entitlement *reasonable*. Third, even if more innovation of a certain kind is necessary, it should be determined how necessary it is. The more necessary the innovation, the stronger form of entitlement preventing second comers from utilizing the information, and also the more types of precautions of innovators should be regarded as reasonable. On the second comers' side, if a certain technical or legal precaution taken by an innovator is determined by the state to be reasonable, second comers' means of access to the innovation would be determined to be *improper* or illegal, if such means directly or indirectly make the very precaution useless. In other words, *improper means* of acquiring information is the other side of *reasonable precautions*.

IV. Exchange of Values after Initial Entitlement

A. Exchange of Tangibles

1. Why exchange of values occurs after initial entitlement

As mentioned in part II, exchange of values occurs after initial entitlement because the initial entitlement is not always the most efficient allocation of resources.[74] There can be people who are not entitled to a certain resource but value the resource more

74) Furubotn & Richter, *supra* note 13, p. 91.

than the entitled person does.[75] For example, suppose that Tom is entitled to a piece of land that is worth $2000 to him. Jane, on the other hand, considers the piece of land to be worth $4000 to her. If Tom and Jane get together and bargain for the exchange of the piece of land and payment,[76] and the land becomes Jane's, $2000 of value would presumably be created in society.[77] This value created from the sale of land is called "cooperative surplus," which means "the value created by moving the resource to a more valuable use."[78] Therefore, the exchange of values after the initial entitlement is beneficial to society, because it creates more value. However, as mentioned before, this exchange of values also generates transaction costs. In the example, Tom has to find somebody who values his land at more than $2000. Or, Jane has to find somebody who she thinks would sell the same kind of land in the example at less than $4000. Then, they have to negotiate over the price, draw a contract for the exchange, and if there is any breach by one party, the other party would take steps to enforce the contract. All of these processes incur costs, and there would be no exchange unless the gains from the exchange to each party exceed the cost of the exchange to each party, as there would be no "cooperative surplus" in the society. A state that wants resources to belong to the one who values it most, therefore, should and would try to reduce the transaction costs. Taking social costs into account, the state would also try to suppress such exchanges as sales of illegal drugs, which would move to a person who values it the most, but which would at the same time create social costs to prevent crimes or provide state-sponsored medical care. Therefore, transaction costs and social costs put limits on the bargaining that produces surplus values in society.

2. Ex-post setting of conditions for exchange and act of necessity privilege in the Korea Civil Code

In the example of the sale of land, the exchange of values occurs after Tom and Jane agree on the price. Without such bargaining and agreement on the conditions for

75) Coase, *supra* note 5, pp. 114-15.

76) The price for the land should be between $2000 and $4000 when transaction costs are zero, because Tom will not want to sell the land at less than $2000, and Jane will not buy the land at more than $4000. Taking transaction costs into account, the price range becomes narrower.

77) If the land is sold at $3000, Tom and Jane respectively get $1000 of the created $2000.

78) Cooter & Ulen, *supra* note 10, p. 76.

exchange, values cannot be exchanged. But, what if the benefit from a value is extremely high, but transaction costs are also so high that bargaining is impossible? What if, individual benefit from a value is not so high, but the aggregate individual benefits--social benefits--from a value is very high? What if movement of values occurs even though neither of the parties wants it to? What if one or both of the parties want the movement of value to occur, but such movement of values incurs negative surplus in the society or social loss?

For example, suppose that a person, while sailing on a lake with his wife and children, meets a violent storm and was in great danger. He finds a harbor, but it belongs to another person.[79] For him to use the harbor and save the lives of himself and his family, he should first find the owner of the harbor, negotiate over and agree on the price for the use of the harbor, and make a contract for the use. However, in this situation of emergency, "the suddenness, with which the storm arose, precluded [the sailor] from finding [the owner of the harbor] and bargaining with him."[80] That is, searching costs in an emergency situation are so prohibitively high that a bargaining cannot occur, even though the sailor is the one who values the use of the harbor the most in the world at the moment. To make the exchange of values occur in this kind of case, the state intervenes and reduces the transaction costs for the movement of resources to the one who values it more than the owner: the common law has devised the privilege of "private necessity"[81] --"If the emergency is sufficiently great, [a person in the emergency] may trespass upon the property of another to save himself or his own property, or even a third person."[82] After using property of others, the user has to pay for the damages to the property.[83] This compensation "assures that trespass occurs only when its value to the trespasser exceeds the cost to the owner."[84] This is the purpose of 'act of necessity' privilege in the Civil Code of Korea; "A person, who unavoidably caused damages to another person in order to avert an imminent danger, shall not be liable for such damages."[85] And it allows the victim to claim for damages to the person who caused the imminent danger.[86] But the Civil Code does not provide

79) Ploof v. Putnam, 71 A. 188, 188-89 (1908).
80) Cooter & Ulen, *supra* note 10, p. 148.
81) *Id*. pp. 147-48.
82) W. Page Keeton *et al*., *Prosser and Keeton on the Law of Torts* (St. Paul, MN.: West Pub. Co., 1984), p. 147.
83) Vincent v. Lake Erie Transp. Co., 124 N.W. 221, 222 (1910).
84) Cooter & Ulen, *supra* note 10, p. 148.
85) Civil Code, Art. 761(2).

that the person in necessity should pay for the damages to the victim in the case that the person in necessity did not cause the danger. However, the damages to the victim can be recovered as 'unjust enrichment'; Article 741 of the Civil Code provides that "a person, who without any legal ground derives a benefit from the property or services of another and thereby causes loss to the latter, shall be bound to return such benefit."[87] Therefore, the Civil Code of Korea also has the legal device that can make costly exchange of values occur by reducing transaction costs.

There are many other examples of constructive transactions, the conditions of which are determined by the court after the transactions in question. The court can reduce the number of the movements of values that incur social costs, e.g., intentional torts and negligence. Taking an intentional or negligent personal injury case as an example, the court can reduce the social cost of medical expenses by imposing the medical expenses on the injurer in the case of battery or car accidents. This is to reduce the social cost by inducing "injurers to internalize the costs that they impose on other people."[88] Even after social costs are reduced by imposing liability on the party who causes harm, the transaction costs of bargaining between a potential driver and a potential victim of a car accident are still very high; "Every driver cannot negotiate with every other driver and agree among themselves concerning how to allocate the cost of future accidents. Nor can every driver enter into a contract with every pedestrian who might get hit by a car."[89] In this case, society can reduce the occurrence of car accidents by setting the conditions for movement of values *after* the accident as damages,[90] which obviously takes less transaction costs than making contracts between every pedestrian and every driver.

3. Constructing the form of exchange and management of affairs in the Korea Civil Code

So far, I have discussed two forms of exchanges: voluntary exchanges based on

86) *Id*. Art. 761(1).
87) *Id*. Art. 741.
88) Cooter & Ulen, *supra* note 10, p. 300. For discussion on minimizing social costs by tort liability, *see*, *id*. pp. 300-302.
89) *Id*. p. 289.
90) Civil Code, Arts. 750-752.

bargaining, and non-voluntary exchanges without bargaining. Contract is an example of the former, while tort is an example of the latter. The following quotation of Professors Cooter and Ulen summarizes the relationships among transaction costs, externalities, contracts, and torts:

> Contract law concerns relationships among people for whom the transaction costs of private agreements are relatively low, whereas tort law concerns relationships among people for whom transaction costs of private agreements are relatively high. Economists describe harms that are outside private agreements as *externalities*. The economic purpose of tort liability is to induce injurers to *internalize* these costs. Tort law internalizes these costs by making the injurer compensate the victim. When potential wrongdoers internalize the costs of the harm that they cause, they have incentives to invest in safety at the efficient level. *The economic essence of tort law is its use of liability to internalize externalities created by high transaction costs* (third emphasis added).[91]

The state can induce values with 'relatively high transaction costs of private agreements' to be exchanged by tort, and values with 'relatively low transaction costs of private agreements' to be exchanged by contract, by applying "bargain rules" and "no-bargain rules" on the remedy level, which was discussed and analyzed by Guido Calabresi and A. Doughlas Melamed in their article *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*.[92] According to them, entitlement can be protected in two ways. First, "entitlement is protected by a [bargain] rule to the extent that someone, who wishes to remove the entitlement from its holder, must buy

91) Cooter & Ulen, *supra* note 10, p. 290.

92) Guido Calabresi & A. Douglas Melamed, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral," *Harvard Law Review*, Vol. 85, (1972), p. 1089. The authors used the term 'property rule' and 'liability rule,' not 'bargain rule' and 'no-bargain rule' as I used in this Article.
One thing to be noted here is that the concept of property in 'property rules' does not mean the right against the world. But, a 'property rule' means that the court should make two parties *bargain* over the use of what is within the private domain of the plaintiff, while a 'liability rule' means that the court deters two parties from *bargaining*.
To avoid a possible confusion between property that means right against the world and 'property rules' that means the inducement of the court to make two parties bargain, I use *'bargain rule'* and *'no-bargain rule,'* instead of 'property rule' and 'liability rule' in this Article.

it from him in a voluntary transaction in which the value of the entitlement is agreed upon by the seller."[93] And "[w]henever someone may destroy the initial entitlement if he is willing to pay an objectively determined value for it, an entitlement is protected by a [no-bargain] rule."[94] "No-bargain rule" needs "an additional stage of state intervention,"[95] since the state (usually the court) should determine the value for the entitlements transferred or destroyed--compensation.[96] The choice for an efficient remedy between bargain and no-bargain rules depends on their transaction costs; when transaction costs are high and bargaining is difficult, a no-bargain rule should apply, and the court sets the price for the use of what is within the private domain[97] of the plaintiff; when transaction costs are low and bargaining is easy, a bargain rule should apply, and both parties have to bargain for the use.[98] Even if a no-bargain rule "[does] not accurately measure each individual's desire for the benefit," it is justified when "the market alternative seems worse."[99]

In reality, however, there are many forms of exchange, which lie between the purely 'voluntary exchange' and the purely 'non-voluntary or constructive exchange.'[100] In the real world, a purely voluntary exchange or a purely constructive exchange, which does not reflect the wills of the parties to the exchange, is an extremely exceptional case. Most forms of exchanges are between these two extremes. One example of such in-between exchange forms in the Civil Code is 'management of

93) *Id.* p. 1092.

94) *Id.*

95) *Id.*

96) *Id.*

97) One of the issues arising from the concept of private domain is what the boundary of the private domain is. It is a very difficult task to draw a line between the private and public domains, because the concept of private itself is an obscure one. However, the smallest and clearest boundary of privacy is the boundary of any property.

98) Calabresi and Melamed explained why 'no-bargain rule' is necessary:

> Often the cost of establishing the value of an initial entitlement by negotiation is so great that even though a transfer of the entitlement would benefit all concerned, such a transfer will not occur. If a collective determination of the value were available instead, the beneficial transfer would quickly come about.

Calabresi & Melamed, *supra* note 92, p. 1106. "A very common reason" for adopting a no-bargain rule than a bargain rule is that "market valuation of the entitlement is deemed inefficient, that is, it is either unavailable or too expensive compared to a collective valuation." *Id.* p. 1110.

99) *Id.* p. 1108.

100) This point was made by Professor Atiyah:

affairs.' Article 734 of the Civil Code provides that "a person who manages affairs on behalf of another without being bound to do so shall conduct that management in the manner most advantageous to the principal according to the nature of such affairs."[101] Article 739 also provides that "if a manager has defrayed any necessary or useful expenses on behalf of the principal, he may demand reimbursement thereof from the principal."[102] 'Management of affairs' requires two conditions: neither legal nor contractual obligation to manage, and management of affairs of others. So, management of another's affairs under a legal obligation or management of one's own affair is not the 'management of affairs' under the Civil Code. The Civil Code requires both manager and principal to meet certain conditions.[103] Two theories try to explain the legal ground for the 'management of affairs.' One theory explains that the law allows the manager to intrude into the principal's affairs without any legal or contractual basis, which is otherwise illegal, because it benefits society as a whole.[104] Another theory explains that management of affairs purports to adequately divide the surplus from the management of the principal's affairs between the manager and the principal.[105] In my opinion, two theories are flip sides of one aspect. The surplus from the management of the principals affairs in the second theory is the very social benefit in the first theory. And the adequate or fair division of the surplus between the manager

> [T]he truth is that the elements of pressure which induce a person to enter into a contract vary so much that it is anyhow hard to draw a line between cases which can be said to be examples of complete free choice, and those in which there is no element of free choice at all.

Atiyah, *supra* note 6, p. 743.

One of the examples is 'essential facility doctrine,' which means that the owner of a... 'essential facility,' - "a relevant market for some input that is crucial to the production of some secondary product" - "has a duty to share it with others,..." Herbert Hovenkamp, *Federal Antitrust Policy: the Law of Competition and Its Practice* (St. Paul, MN: West Pub. Co., 1999), pp. 273-74.

101) Civil Code, Art. 734(1).

102) *Id*. Art 739(1).

103) Of course, the principal-manager relationship occurs after the management of anothers affair's. However, for the convenience of discussion, the terms 'principal' and manager will be used in this article before such a relationship occurs.

104) Yun-Jik Gwak, *Specific Provisions in Law of Obligations* [*chaegwongakron*], rev. ed., (Seoul: Bakyoungsa, 1993),p.585; Jeung-Han Kim, *Specific Provisions in Law of Obligations* [*chaegwongakron*] (Seoul: Bakyoungsa, 1988), p.388; Sangyong Kim, *Specific Provisions in Law of Obligations II* [*chaegwongakron (ha)*] (Seoul: Beopmunsa, 1998), p.4.

105) Eun-Young Lee, *Specific Provisions in Law of Obligations* [*chaegwongakron*], rev. ed., (Seoul: Bakyoungsa, 1994), p.476.

and the principal in the second theory gives the incentive to manage another's affairs, which benefits society as a whole. Therefore, the 'management of affairs' provision in the Civil Code allows principals and managers to overcome transaction costs and produce a surplus in the way that the manager first intrude into the principal's affairs 'in the manner most advantageous to the principal,' and then the principal should pay the expenses to the manager. Between the 'purely voluntary exchange' and the 'purely constructive exchange,' the 'management of affairs' under the Korean legal system lies closer to the 'purely constructive exchange.' It is because the Civil Code of Korea does not have the concept of 'quasi-contract,'[106] and the 'management of affairs' is a 'statutory obligation' rather than a contractual one under the Civil Code of Korea.

Another issue regarding exchange of values is how the surplus should be divided between the parties to a constructive exchange. In the example of a sailor caught in a severe storm, the owner of the harbor is in a monopoly position and could ask the sailor "an exorbitant amount of money for the use of the dock."[107] However, under the article 104 of the Civil Code,[108] even if there were an agreement for the use of the harbor between the sailor and the owner of the harbor, the sailor could later refuse to pay the price and then the court could set the "fair price." Surely, saving lives in danger has great value in society. But if the work of rescue is carried on after private bargaining, the price for rescue would be far higher than the cost of rescue. However, if there is not sufficient reward for rescue, there would be less rescue than the optimal level.[109] The state should fix the price of reward for saving lives, so that an optimal level of rescue would be produced in the society. Professors Cooter and Ulen proposed an incentive-based solution.[110]

First, "*fortuitous* rescue," which "uses resources that just happen to be available," requires "a modest reward to compensate for resources actually consumed in the rescue."[111] Second, "*anticipated* rescue," which "uses resources set aside in case they are need for a rescue," requires "sufficient reward to compensate for preparations

106) Sang-Yong Kim, *supra* note 104, p.2.

107) Cooter & Ulen, *supra* note 10, p. 148.

108) Civil Code, Art. 104 provides that "a juristic act which has conspicuously lost fairness through strained circumstances, rashness, or inexperience of the parties shall be null and void."

109) Cooter & Ulen, *supra* note 10, p. 148.

110) *Id*. pp. 264-65.

111) *Id*. p. 264.

against emergencies."[112] Third, "*planned* rescue," which "occurs when the rescuer searches for people who need rescuing," requires sufficient reward to compensate for search.[113] Therefore, "*fortuitous* rescue" needs the smallest rewards, and "*planned* rescue" needs the largest rewards. The amount of rewards, which is the part added to the cost of rescue, depends on the *necessity of the society to "induce investment* in rescue at the efficient level."[114] Therefore, if the society faces few emergencies, it needs a "modest reward" for "*fortuitous*" rescues, and if it faces emergencies often, it needs a bigger reward for "*anticipated or planned* rescues."[115]

In the case of the 'management of affairs,' article 739 requires the principal to pay the manager only for the expenses. Thus, the Civil Code provides rewards for only 'fortuitous' cases, and does not give further incentives to manage another's affairs. However, under the Korean legal system, rewards for 'anticipated' and 'planned' cases are provided by other statutes For example, article 849 of the Commercial Code provides a person, who rescued a ship or its cargo, with a right to claim rewards.[116]

In this section, I have discussed why entitlement is necessary and how the values are exchanged after the initial entitlement in the context of transaction costs and externalities. I also discussed how different legal protections of entitlement can reduce transaction and social costs and induce resources to its efficient use. In the next section, I will show that basically the same theories apply to the entitlement and exchange of both tangibles and information with necessary variations, and show what features of information cause those variations.

B. Reasonable Precautions in Utilizing Unpropertized Information

After certain information is sorted out and propertized, there is still information in the private domains of innovators. The explanation for why exchange of values occurs after the initial entitlement in the previous section also applies to the entitlement *in personam* to information. Information is diffused on the course of exchange, and in

112) *Id.*

113) *Id.*

114) *Id.* p. 265 (emphasis added).

115) *Id.*

116) Commercial Code [*sangbeop*] (Law No. 1000, January 20, 1962, lastly revised on December 31, 1999, as Law No. 6086), Art. 849.

this section, the routes of diffusion of information and the innovator's efforts to prevent the diffusion on the course of exchange will also be discussed.

1. Firm or market

There are two ways for innovators to utilize information. First, innovators can transform resources according to the information and sell them (goods or services) in markets. Second, the innovator can sell the information itself in markets. In the former utilization, the innovator can hardly transform resources by himself. In most cases, innovators need somebody else to help them process the information and transform resources according to the information. That is, the innovator needs an organization or a firm. Therefore, the first case can be called the utilization of information through firms,[117] I use firm rather than organization to avoid possible confusion that organization may include not only business associations but also such organizations as the Securities and Exchange Commission. The second case can be called the utilization of information through markets.[118] Through firms and markets, information is not only utilized but also diffused. And now, we are again facing the problem of underproduction of information, and to solve the problem, it is necessary to identify the routes, through which information flows.

2. Identifying routes of diffusion

In the case of utilization through firms, the innovator has to give someone else access to his private domain and disclose the information to them. So, the information

117) I use " firm" rather than "organization" to avoid possible confusion that organization may include not only business associations but also such organizations as the Securities and Exchange Commission.

118) The choice between a firm and a market is based on whether information as a factor of production is to be coordinated by the price mechanism or the firm. Coase, *supra* note 5, pp. 36-37. The answer of Coase is that in some cases, using the firm is more profitable than using the price mechanism. And, the costliness of transaction is the source of using the firm instead of the market:

> The main reason why it is profitable to establish a firm would seem to be that there is a cost of using the price mechanism. The most obvious cost of "organizing" production through the price mechanism is that of discovering what the relevant prices are.... The costs of negotiating and concluding a separate contract for each exchange transaction which takes place on a market must also be taken into account.

first flows to the innovator's employees or agents. After transformation of resources within the firm, or within the private domain of the innovator, the resultant products can be sold in markets. And the buyers might be able to figure out the information from either reverse-engineering or independent research. In the case of the utilization through markets, information flows to the buyers or negotiating partners. In the above two cases, information flows through markets--labor markets, product or service markets, or information markets. The information is disclosed with innovator's consent within the firm (the private domains of innovators), or goes out of the private domain of innovators, embodied in products or as a product itself, with the consent of innovators. Innovators can also sell or license their information itself to others. The last case of information diffusion is that information is taken out of the private domain of innovators without consent.

3. Innovators efforts to secure rights *in personam*

A rational innovator, who is promoting his self-interest, will naturally make efforts to prevent the diffusion of *unpropertized* information on the personal level. And the steps taken to prevent diffusion would be focused on the routes, through which information flows. First of all, to prevent information from disclosure without the innovator's consent, the innovator would employ some kind of physical security measures. Innovators can also take contractual security measures to prevent a reduction of profits from information, which may be due to (1) the utilization of information by employees during or after employment; (2) reverse-engineering or independent research by buyers; or (3) disclosure of information by negotiating partners or buyers of the information. Because contract is a legal tool that most utilization of information need, it can also be the most effective legal tool for innovators to prevent the diffusion of information in the course of utilization. That is, innovators can put provisions that prohibit utilization of their information in employment contracts, licensing, or sales contracts: contracts not to compete, not to disclose, not to reverse-engineer, or not to utilize information in question.[119] These

119) *Id.* p. 38. Preparing for, let alone enforcing, contracts for the exchange of information takes prohibitively large transaction costs. Therefore, without propertization or any device, which prevents information from diffusion, the firm would be more profitable for the coordination of information as a factor of production. But, these contractual measures are limited by the constitutional right of the freedom of the choice of occupation. Constitution [*heonbeop*]

contracts function as barriers surrounding innovators' information. These barriers promote innovation, but prevent information from diffusion. Therefore, a legal principle is necessary, which the court can use to determine the enforcement of the private precautions.

4. Constructing the form of exchange of information and trade secret protection in Korea

If an innovator's precaution is determined by the state to be reasonable in a whole or in part, the second comer, who acquired the innovator's information by improper means, has to bargain with the innovator for the utilization of the information. However, if the transaction cost of valuing the utilization of the information is too large to make a bargain, but if the utilization of information can allow both more competition and rewards for the innovator, the state can reduce the transaction cost of bargaining with "an objectively determined equivalent of the price at which [the innovator] would have sold what was taken from him."[120]

Taking acquisition of trade secrets by improper means as an example, if the court determines that the 'transaction cost of private agreement' for the use of the type of trade secrets in question is likely to be high, it should apply 'no-bargain rule,' and people after the decision, who wants to access the same type of trade secrets of others,[121] would depend on 'improper means (tort)' than trade secret licensing (contract)' to use the trade secret. By the same token, if the court determines that the transaction cost of private agreements' is likely to be low, it should apply 'bargain rule,' and people after the decision, who want to access the same type of trade secret of others, would depend on trade secret licensing (contract) than improper means (tort).[122]

The UTA article 14-*2* provides that the profit made by the defendant be regarded

(1987), Art 15.

120) Calabresi & Melamed, *supra* note 92, p. 1110.

121) Assume that reverse engineering or independent research is not an economic way to acquire the trade secret.

122) The court can apply 'bargain rule' by granting injunction and make the defendant bargain with the plaintiff to use the plaintiff's trade secret. However, it is to be noted that the remedy of damages for the infringement of trade secrets does not necessarily mean the application of 'no-bargain rule.' If the amount of the damages is higher than the bargained price that both parties would have agreed, the remedy actually has the effect that induces people to make trade secret licensing contract to acquire the same kind of trade secrets—the effect of the application of 'bargain rule.'

as damages for the infringement of trade secrets.[123] Instead, the plaintiff can claim the amount of royalties that she could have gotten from a license contract for the use of her trade secret in the ordinary course of business as damages.[124] In addition, the plaintiff can claim the amount of damages, which exceeds the amount of ordinary royalties in article 14-*2*(2). But, when determining the excessive amount over ordinary royalties as damages, the court may consider the fact that the defendant infringed the trade secret without any intention or reckless negligence.[125] Therefore, even though the court does not grant an injunction as the remedy,[126] if the court grant the excessive amount over the ordinary royalties as damages, more potential competitors of the trade secret holder are likely to acquire the trade secret through a bargain, that is, a contract, rather than improper means, that is tort. As for those defendants, who infringed trade secrets of others without intention or reckless negligence, the court may consider the possibility that if the defendant had known that he was about to acquire the trade secret by improper means he would have chosen to acquire it through a contract with the trade secret holder. If the court determines that the defendant would have chosen to acquire the trade secret through a contract, rather than by improper means, it is desirable for the court not to grant the excessive amount over ordinary royalties as damages. Thereby, the court can overcome the transaction cost that would have born by the defendant in finding out who was the rightful holder of the trade secret.

The next question is how much reward the innovator should receive. The 'incentive-based solution' proposed by Professors Cooter and Ulen can also apply to information. First, if society strongly needs a certain kind of information, it needs to grant a "*larger reward*" to innovators of such information in order to induce them to invest resources in producing the information. Second, if society finds a certain kind of information beneficial, but not worth investing resources for the production of the information, the innovators of such information should get a "*modest reward*." It is the same with the case of "*inducing rescues*" in that the reward should depend on the *necessity of the society* to "induce investment in the desired activity at the efficient level."[127]

123) UTA, Art. 14-*2*(1).
124) *Id*. Art. 14-*2*(2).
125) *Id*. Art. 14-*2*(3).
126) *Id*. Art. 10.
127) Cooter & Ulen, *supra* note 10, p. 265.

According to Professors Cooter and Ulen's incentive theory, the "fortuitous rescue" "requires a modest reward to compensate for resources actually consumed in the rescue," because it "uses resources that just happen[s to be available."[128] This theory can apply to information and explain why entitlement has hardly been granted to "facts" in both U.S. and Korea. The traditional providers of "facts" usually used information "that just happen to be available." Moreover, the providers of facts usually have another way of recovering their investment in gathering facts, i.e., revenue from advertisement. Therefore, the same "incentive-based" theory can explain the pricing or valuation of what is exchanged, whether it is information or tangibles, or whether they are facts or results of innovation. There are minor, but no fundamental, differences in applying the "incentive-based" theory, whether it is factual, innovative, or creative information, or even a 'thing.'

V. Conclusion

To understand the theories on the laws governing tangibles is important in making laws on information. Basic theories and principles on entitlement and exchange of values have been discussed, and it is shown that the same theories apply to both information and tangibles. The state should grant entitlement to information, when the gains from the entitlement exceed the costs of the entitlement, just as it does with entitlement to tangible objects. The state should also enforce constructive exchange for more efficient use of informational and tangible resources when the market alternative seems worse. Those basic theories and principles would hardly change, but the result of the application of them would change as the transaction costs of entitlement and exchange change mostly due to technical developments. That is, the difference in the transaction costs in entitlement and utilization makes laws on information and tangibles look different. The difference in the transaction costs even makes different forms of legal protection for information. There are two types of entitlements available for the exclusion of others from the utilization of information. One is a right *in personam* (right against a person) and the other is a right *in rem* (right against the world). The enforcement of entitlement to information is costly and only information with a high social value and a concrete definition is worth entitlement against the

128) *Id*. pp. 264-65.

world. Therefore, most information is entitled to be enforced only against a person, the enforcement cost of which is relatively cheap. If the value of a certain type of information, which is being protected by right *in personam*, increases or the cost to monitoring and enforcement decreases, due to changes of circumstances such as technological developments, or if the entitlement itself can reduce measurement costs, the information becomes worth a right *in rem*. Then the society can afford the property right to the information, such as a patent right. The more technologies develop, the more propertizable information is available, to which a right *in personam* is currently granted. However, the fact that the society can afford a right against the world does not necessarily lead to the grant of it. There are still other necessary conditions for the creation of such entitlement. The entitlement against the world, and also against a person, should both have the effect of increasing incentives to create information, and the incentive to create information should be necessary for there to be any entitlement at all. If the amount of the information created is already optimal, or even over-productive, the entitlement is not necessary and should not be given.

COMMENTS

Recent Decisions of the Korean Constitutional Court on Family Law

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I. Introduction

Until quite recently it was the generally-accepted view in Korea that the Civil Code, considered to fall under the realm of "private law," had little to do with Constitutional law, which was considered a part of "public law". But this view has begun to change as constitutional adjudications have begun to flourish with the inauguration of the Constitutional Court in 1988. Despite the recent developments, the Constitutional Court has rarely directly declared any provisions of the Civil Code as unconstitutional. Before 1997 there were only two Constitutional Court cases dealing with the constitutionality of provisions of the Civil Code, and in both such cases it was declared that the provisions were not unconstitutional.[1)]

However, the Constitutional Court has since declared in three separate cases during 1997 and 1998 that certain provisions of the Civil Code pertaining to family law and

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1) The Constitutional Court Decision, July 29, 1993, 92 heonba 20, Constitutional Court Report [heonbeopjaepanso panryejip], Vol.5 No.2 36 ff., found Civil Act Art. 245 (1) on the adverse possession of immovable property not unconstitutional; August 29, 1996, 93 heonba 6, Constitutional Court Report [heonbeopjaepanso panryejip], Vol. 8, No.2, 32 ff. found Civil Act Art. 440 on the interruption of prescription against surety as constitutional.