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THE PROTECTION OF DIGITAL INFORMATION AND PREVENTION OF ITS UNAUTHORIZED ACCESS AND USE IN CRIMINAL LAW

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I. INTRODUCTION

Discussions of the modern era as an "information-based society" may seem outdated, since the world is already flooded with information, with the rapid growth of the information-technology industry at the core of such development. The expansion of cyberspace has been part of modern life for quite some time. All kinds of communicative media, including voice, visual, and text media, have been digitalized, and various mass media have been integrated with one another. The integration and exchange between various media have changed the pattern of daily life. Today, cyberspace is no longer a world of virtual reality separated from the real world, but rather makes up a substantial portion of the real world that may not be felt or touched by our senses.

The history of computer-related crime begins with the history of computers. The emergence of the information society, which greatly values and depends on incorporeal values and information, in the latter part of the twentieth century, has outpaced the development of new laws to protect digital items of intangible value.[1]

In this context, the role of intellectual-property law has particularly expanded with copyright and patent protection being extended to items like computer software and software-related inventions. Legislation all

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1. For a primer on the history of computer-related crime and international legislation, *see generally* Marc D. Goodman & Susan W. Brenner, *The Emerging Consensus On Criminal Conduct In Cyberspace*, 6 UCLA J. L. & Tech. 1 (2002), *available at* http://www.lawtechjournal.com/home/articles/37/.

over the world on *sui-generis* legal systems for intangible property has also been developing.[2]

Nonetheless, there are a number of valuable intangible properties that do not have specific legislation devoted to their criminal regulation and protection. These include: (1) intangible creations that are not protected by special laws; (2) ideas that have not been developed or reduced to material form for the purposes of patent or copyright law;[3] (3) inventions that have been kept "secret" to protect their value; and (4) valuable confidential information and trade secrets.

This Article focuses on these four categories of intangibles when they are stored within a computer system. This list is not exhaustive, but gives some indication of the types of digital property that society may want to protect against unauthorized use by, or interference from, third parties. The world's legal systems have had an unsatisfactory track record in protecting valuable information over the course of the previous century, giving rise to the need for laws that specifically address issues related to the protection of the integrity of digital information-storage systems.[4] Criminal law is not presently fit to intervene in disputes involving these types of information.

As a result, in order to establish the proper development and function of an information society, there is a need to make progress in defining the meaning of information that warrants protection under criminal law. This Article proposes the creation of a statutory unlawful-use offense to regulate the illegal use of digital property containing important information, analogous to the common statutory crime of unlawful use of a vehicle.

Section II provides an overview of the traditional limitation of the crime of larceny[5] to moveable property and some of the difficult issues of interpretation of the modern theft offence that are related to the inclusion of intangible property within its definition in both Korean and Anglo-American law. This section discusses whether the crimes of larceny

2. *See* Jiyon Jun, *Protection of Intellectual Property in Criminal Law*, 41 J. KOREAN CRIM. JURISDICTION 67, (2009); Jacqueline Lipton, *Protecting Valuable Commercial Information in the Digital Age*: *Law, Policy and Practice*, 6 J. TECH. L. & POL'Y 1 (2001).

3. Copyright law generally protects the form of expression of information without protecting the content of that information. Trademark law does not protect information, only the names, marks, and logos used by a business. *See, e.g.,* Copyright, Designs and Patents Act, 1988, c 3(2) (Eng.); Trade Marks Act, 1994, c 1(1) (Eng.).

4. *See* Lipton, *supra* note 2, at 2.

5. This Article distinguishes between the traditional, common-law crime of larceny and the modern, statutory crime of theft by using the terms *larceny* and *theft*, respectively. It uses the term *steal* to indicate the unauthorized taking of some item that does not belong to the taker, which may or may not constitute larceny, theft, or some other statutory theft-like crime, depending upon the item taken and the presence or absence of other statutory elements.

and/or fraud can be proven if important digital information is stolen, whether intangible digital information can be considered property for the purpose of the crime of larceny, and whether the asportation and specific-intent elements of larceny can be proven with the theft of digital information.

Section III highlights the confusion within existing criminal-law systems that has arisen regarding criminal, unauthorized access to digital files. This section goes on to examine relevant histories and cases that have wrestled with the issue of whether digital property containing critical information can be regarded as property under new statutes. Finally, Section III examines expansive judicial interpretations for the purpose of defining the criminal law of larceny/theft in the United States and Korea.

Section IV surveys the scholarly literature addressing both problems outlined in Section II and the legislative and judicial "solutions" traced in Section III. In particular, it recounts the two primary solutions that are proposed for the dilemma posed by stealing of digital information: including digital information within the definition of property for the purpose of larceny/theft and the creation of specific statutes dealing with the taking of digital property.

Section V critiques these two most popular legislative, judicial, and scholarly approaches to the problem of "stealing" digital information. Section VI argues the necessity to legislate in order to solve the problem of unauthorized taking of digital information and the form that such legislation should take.

II. THE PROBLEM

New forms of criminal activity in the digital era mostly involve highly advanced technology and, thus, are more susceptible to frequent advances and changes.[6] Personal computer usage has been common since the mid-1980s, and, since that time, crimes involving computers and the Internet have increased. Since cyberspace itself is constantly evolving at a faster pace than criminal laws, potential crimes occur that are not obstructed by limits in time and space, making their punishment by conventional, consequentialist criminal laws difficult. For example: a virtual entity committing acts against another entity in cyberspace that would be crimes if they occurred between human beings; illegal profit

6. The Korean cyber-police received 122,902 cyber-crime complaints and arrested 103,809 suspects in 2010. *See* CYBER COP NETAN, http://www.netan.go.kr/ (last visited Mar. 8, 2012). According to the Korean Ministry of Justice, 26,537 computer crimes occurred in 2009. *See* KOREAN MINISTRY OF JUSTICE, THE WHITE PAPER ON CRIME (2010) at 102, available at https://www.lrti.go.kr/web/information/DataAction.do?method=list&pblMatlDivCd=01.

making from e-money transactions and transfer of property online; alteration or forgery of digital documents and media contents; theft of trade secrets, information, and domain addresses; and interference with business through computer hacking.

Therefore, because it is possible to manage and care for information in cyberspace just like tangible property and there is realistically a need to protect such information under the criminal law in the same manner as tangible property, the issue of whether intangible information should be recognized as an object of property crimes cannot be determined from a "property interest" point of view, but instead from a "property" point of view. If various types of information available in cyberspace are recognized as "property" under the criminal law, any act of trespass or violation against such information could be classified as any one of these property crimes, depending on the circumstances: theft, embezzlement, receiving stolen property, fraud, and/or robbery.

The current majority view is that information itself is not protected by theft/larceny laws because it is not a material object or movement of power and, therefore, not property. This conclusion is supported by the fact that information has its own unique characteristics differentiating it from other goods and therefore, the transfer of its ownership is difficult to recognize. This interpretation is based on both the current Korean Penal Code ("KPC") and Anglo-American common-law tradition. In order to understand the extent of this dilemma it is necessary first to examine the scope of larcenable property.

Property under the Korean Penal Law

A problematic boundary within the definition of larceny is that it is restricted to moveable, tangible property. Under the KPC, the direct object of a property crime must be either the property or interest in property, and the KPC distinguishes those two varieties of object strictly. Theft-of-property crimes under the KPC include larceny, embezzlement, possession/receipt of stolen property, criminal damage, obstruction of exercising legal rights, unlawful use (of automobiles, etc.), misappropriation, and robbery. The definition of the crimes of breach of trust, computer fraud, and unjust enrichment include property interest as their only direct object, while the direct object for robbery, fraud, blackmail, unlawful use of accommodations, and false acquittal from compulsory execution include both property and interest in property.

If information is considered to be property, and if one steals information secretly, the crime of larceny may be established.[7] However, there is

7. "Information" is defined as all types of data and knowledge expressed as symbols, characters, audio, sound, and video that are processed in an optical or electronic form for a specific purpose. Framework Act on National Information, art. 3, *wholly amended by* Act

no larceny if the thing taken is not considered to be property. Article 346 of the KPC provides that "[e]nergy that is subject to human control shall be deemed to be property". Thus, in order to determine whether an intangible item taken by use of a computer is property for the purpose of a larceny prosecution, one must first ascertain whether it satisfies the elements of "material things," "human control," and "energy."

Material Things

Material things include any object that takes the form of a solid, liquid, or gas. For instance, the sun and moon count as material things (although, because they are not under "human control" (at least yet), they still are not property for the purpose of a larceny prosecution).[8] Therefore, where one's legal rights are inscribed in writing, such as with negotiable securities, the securities themselves are property. However, it is well-established under Korean law that other rights, such as claims or bonds, do not take up any space, so they are not regarded as material things, and therefore, are not property for larceny purposes.[9]

According to the Korean Supreme Court, copies of real-estate contracts taken by an employee without permission are property for the purpose of the crime of larceny. Property does not necessarily have to have objective monetary value, and even if it is not being used by others, the owner possesses its subjective value.[10] Thus, diaries, old photos of an ex-lover,[11] and torn promissory notes[12] are considered to be property and are, therefore, larcenable.

Human Control

Human control comprises physical management, but not operational management. Things like hydraulic power, wind force, artificial cooling, and artificial heating, which are physically manageable, are property. When one uses another's phone without consent and talks over the phone, one is unjustly using the sound sending/receiving function, which is available through a common carrier, but, because one gained only intangible property, which is not physically manageable, the crime of lar-

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No. 9705, May 22, 2009, *last amended by* Act No. 10166, Mar. 22, 2010 (S. Kor.), *available at* http://unpan1.un.org/intradoc/groups/public/documents/UN-DPADM/UNPAN042828.pdf.

8. *See* YOUNGKEUN OH, CRIMINAL LAW SPECIAL PART 297, (2nd. Ed. 2009) [hereinafter OH, CRIMINAL LAW] at 297; KIM/SEO, CRIMINAL LAW SPECIAL PART 297 (7th. Ed. 2009), at 275; JONGDAE BAE, CRIMINAL LAW SPECIAL PART 275 (6th. Ed. 2006), at 64/7.

9. *See, e.g.,* SANGGI PARK, CRIMINAL LAW SPECIAL PART 243 (7th. Ed. 2008), at 243.

10. Supreme Court [S. Ct.], 2007Do2595, Aug. 23, 2007 (S. Kor.).

11. *See* OH, CRIMINAL LAW, *supra* note 8, at 296.

12. Supreme Court [S. Ct.], 87Do1240, Oct. 13, 1987 (S. Kor.).

ceny cannot be established.[13]

Energy

Traditionally, the concept of property started with material things. However, as electricity gained wide usage at the end of the 19th century, debates began about whether electricity was property that could be "stolen." According to Article 242 of the German Penal Code ("StGB"), the property element of larceny is limited to a 'movable thing (bewegliche Sache)', and there is no doubt that this is limited strictly to material things. Thus, pursuant to the precedents from the German courts, because electricity is in the form of energy with vibration of macromolecules, it is not considered a movable thing. Since electricity cannot satisfy one of the elements for larceny, punishing one for larceny for the act of stealing electricity is an analogical interpretation, which is not permitted by the court.[14] This has been the predominant position taken by German scholars upon this point,[15] and Germany has separately defined theft of electricity in Article 248c of the StGB.

According to the Japanese Supreme Court's ruling in 1903, however, property includes electricity as a material thing under the criminal law, because "electricity is not a material thing but its existence is an object identifiable by the five senses, and it can be produced artificially and has usefulness to human life, and it can be randomly dominated as one assigns or possesses those."[16] There was considerable controversy in Japanese academia over this decision at that time, and, to solve this problem, Article 245 of criminal law of Japan was amended explicitly to declare that "electricity is considered to be property."

So, in sum, Germany follows a materiality theory with respect to the theft of energy, while Japan follows a managing-potential theory. The KPC attempted to embrace both the German and Japanese theories of property under Article 346. As such, in the process of adopting foreign-law systems, the original law is somewhat distorted and deteriorated, but this ambiguity also creates an opportunity for the Korean criminal law to develop and become more enhanced. While Article 346 of the KPC

13. Supreme Court [S. Ct.], 98Do700, Jun. 23, 1998 (S. Kor.). This leaves open the question, unanswered by the courts, of whether any kind of "services" can be regarded as intangible "quasi-property." Some commentators have treated telecommunications services as such and have written about dishonest misappropriation and/or "theft" of such services. *See* PETER GRABOSKY & RUSSELL SMITH, CRIME IN THE DIGITAL AGE: CONTROLLING TELECOMMUNICATIONS AND CYBERSPACE ILLEGALITIES 63-88 (1998).

14. RGSt (ENTSCHEIDUNGEN DES REICHSGERICHTS IN STRAFSACHEN) 29, 111, 116; 32, 165, 185 f (Ger.).

15. *See, e.g.*, Wessels/Hillenkamp, *Criminal Law Special Part 2*, (28th Ed. 2005) at § 2 II 1 Rn. 64.

16. Saiko Saibansho [Sup. Ct.], Meiji 36 (1903), 5 21 (Japan).

provides that "[e]nergy that is subject to human control shall be deemed to be property," there are still possible areas of controversy regarding the essence of "property." Consequently, the concept of property under the KPC is limited to material objects and manageable power, and the majority view of scholars and case law suggests that section 346 of the KPC is a mere cautionary provision.[17]

In interpreting the KPC, it is generally agreed that the principle view of identifying material objects as property is in accordance with the principle of legality. In light of such interpretation, section 346 of the KPC seems to be the exception rather than the rule.[18] Therefore, according to the majority view and prevailing cases, even though information is a subject of care that holds sufficient economic value in today's information society, it does not constitute property as it is understood under the criminal law.

Nevertheless, these concepts of controllability and manageability are relative concepts, and, thus, subject to change as time passes. This is demonstrated by the debate that occurred approximately thirty years ago in Korea surrounding the inclusion of the concept of manageable power as property under Section 346 of the KPC. Although debates as to whether putting one's property in another person's refrigerator, and then later removing the frozen object is an act of stealing another person's cold air, or whether attaching one's vehicle to another person's vehicle to have it moved from one place to another is an act of stealing another person's force of movement, may seem like simple discussions about the scope of manageable power as property,[19] they still have significance to the question of digital property in today's world.

The controversy over the theft of electricity a hundred years ago is similar to that over information larceny today, and criminal law is at a turning point due to the development of information technology. Information today is mostly found in small microchips, disks, optical disks, and other electronic media, instead of the conventional printed material that was dominant during the print-media era. This intangible property has become a valuable asset in business transactions in society today, and we need to reconsider the value of information processed within information systems.

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17. *See, e.g.,* OH, CRIMINAL LAW, *supra* note 8, at 294; JAESANG LEE, CRIMINAL LAW SPECIAL PART 16/10 (5th. Ed. 2004), at 16/10; WOONG IM, CRIMINAL LAW SPECIAL PART 16/10 (2d. Ed. 2009), at 263-64.

18. *See* KIM/SEO, *supra* note 8, at 274; PARK, *supra* note 9, at 244; JONGDAE BAE, *supra* note 8, at 64/6; ILSU KIM, KOREAN CRIMINAL LAW III 527 (1994).

19. *See, e.g.*, Goojin Kang, *Property In Criminal Law*, Gosigye 65, 68 (Feb. 1980).

PROPERTY IN ANGLO-AMERICAN CRIMINAL LAW

In the United States, "property" is defined by a combination of three sources: common-law doctrines, statutes, and custom and practice.[20] At common law, larceny was limited to misappropriations of goods and chattels – *i.e.,* tangible personal property.[21]

Today, the most influential definition of what constitutes "property" for the purpose of theft law is that found in the Model Penal Code of 1962 ("MPC"). Property is defined in the MPC as "anything of value, including . . . tangible or intangible personal property."[22] The MPC Commentary, clarifying this definition, characterizes property as "anything that is part of one person's wealth and that another person can appropriate."[23] While originally only tangible property was subject to criminal theft under the common law, recent state criminal statutes, modeled after the MPC, define property as "anything of value," including both tangible and intangible property.[24] Under this definition, intangible property can be a protectable property as long as it possesses value. The language within these theft statutes broadly defines the property interests protected. However, legislatures tend to specifically enumerate the unconventional forms of protected personal property. Intangible property is usually protected in this manner.[25]

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20. *See* Andrea Vanina Arias, Comment, *Life, Liberty, And The Pursuit Of Swords And Armor: Regulating The Theft Of Virtual Goods*, 57 EMORY L.J. 1301, 1309 (2008).

21. *See* Bell v. United States, 462 U.S. 356, 360 (1983) ("common-law larceny was limited to thefts of tangible personal property"); *see e.g.* People v. Zakarian, 460 N.E.2d 422, 425 (1984) (noting that at common law, "only tangible personal property could be the subject of larceny. Written documents such as deeds and contracts . . . were not considered property for the purpose of larceny"); *see also* WILLIAM BLACKSTONE, COMMENTARIES ON THE LAW OF ENGLAND, Book IV, 230 (1879) (defining larceny as "the felonious taking and carrying away of the personal goods of another"); WAYNE R. LAFAVE, PRINCIPLES OF CRIMINAL LAW 704 (2d ed. 2010).

22. MODEL PENAL CODE § 223.0 (6) (2006).

23. MODEL PENAL CODE § 223.2 (1985).

24. *See* Arias, *supra* note 20, at 1313 n.101. The following penal statutes classify property as "anything of value," even if intangible: ALA. CODE § 13A-8-1(10) (1994); ARIZ. REV. STAT. ANN. § 13-1801(A)(12) (West 2001); ARK. CODE ANN. § 5-36-101(7) (LexisNexis 2003); FLA. STAT. ANN. § 812.012(4)(b) (West Supp. 2005); IND. CODE ANN. § 35-41-1-23(a)(1) to (3) (LexisNexis 1998); KAN. STAT. ANN. § 21-3110(16) (1995); ME. REV. STAT. ANN. tit. 17-A § 352(1)(B) (West 1983); MO. ANN. STAT. §§556.063(13), 570.010(10); MONT. CODE ANN. § 45-2-101(60)(k) (2003); NEB. REV. STAT. § 28-509(5) (1995); N.H. REV. STAT. ANN. § 637:2(I) (1996); N.J. STAT. ANN. § 2C:20-1(g) (West Supp. 2004); N.M. STAT. ANN. § 30-1-12(F) (LexisNexis 2004); OR. REV. STAT. § 164.005(5) (2003); 18 PA. CONS. STAT. ANN. § 3901 (West 1983); S.D. CODIFIED LAWS § 22-1-2(35) (LexisNexis 2003); TENN. CODE ANN. § 39-11-106(a)(28) (2003); TEX. PENAL CODE ANN. § 31.01(5)(B) (West 2004-2005); UTAH CODE ANN. § 76-6-401(1) (2003); and WYO. STAT. ANN. § 6-1-104(a)(viii) (LexisNexis 2003).

25. *See* Ralph G. Picardi, *Theft Of Employee Services Under The United States Penal Code*, 23 SAN DIEGO L. REV. 897, 902 (1986).

The Anglo-American law system holds a uniform view that a property interest is a part of the concept of property. The United Kingdom's Theft Act of 1968 ("Theft Act") defines property as an object of larceny under Section 4 (1) to include "money and all other property, real or personal, including things in action and other intangible property."[26] Under the Theft Act, property has the broadest possible meaning. Nonetheless, the question of whether these broad definitions apply to theft of intangible property remains.

An attempt to steal or illegally use information belonging to another person without being in a justifiable legal relationship is an attempt to acquire such information without any consideration, and it may result in an economic loss to the other person (at least with regard to the lost consideration). Although information is an intangible form of value in which the actual transfer of its possession or control cannot be visually distinguished like the transfer of a specific object or power, it is a good that holds great value in present-day information society. Therefore, if the criminal law does not regard the illegal use of information as a form of theft, it is left with a considerable void for such damaging acts. The result of this confusion is that current law lags behind the developments of the information society by leaving unremedied a gap between the economic value of information in today's information-based society and the normative evaluation of such information.

The Necessity for Protection of Digital Property Beyond Fraud in Criminal Law

Following a wave of revisions during the 1980s and 1990s, most criminal law statutes in developed countries include provisions regulating crimes committed using computers. The typical computer crime that these statutes target is intellectual property right infringement via the computer or the Internet. The problem with present statutory schemes is that, in an information-based society, computers and the Internet are only the means to an end. What is more important is the information contained in such media. The information-communication network, therefore, must also be recognized as a legal interest to be protected under the criminal law.

In order to recognize the intangible value of information as an object of larceny, information must still be recognized either as personal property or as having a property interest. Korean criminal law distinguishes

26. Australian jurisdictions have also adopted this model of theft. *See* Alex Steel, *Problematic and Unnecessary? Issues with the Use of the Theft Offence to Protect Intangible Property*, 30 Sydney L. Rev. 575, 587 (2008), *available at* http://papers.ssrn.com/sol13/papers.cfm?abstract_id=1420423.

property and property interest strictly.[27] However, the concept of a property interest usually covers more than the property, and instead considers property as one of the special forms of property interest. Under the current law, with regard to property crimes involving the nonconsensual taking of intangible information, only deception and misappropriating third-party property are criminalized as computer fraud. If the law recognized the property interest of information in cyberspace, the fraudulent taking of an individual's information – for example, through the Internet – would constitute the crime of fraud. However, the unlawful taking of such information by other means (other than fraud) would not constitute the crime of theft because information is not recognized as "property" when it is the object of a larceny. For example, if an individual uses another's credit card and transfers money from that person's account to his/her own account, the act of entering false information into the information-processing device and processing it without authorization is deemed computer fraud, but not larceny. If, however, that same individual simply withdraws money from an ATM using his/her own credit card or debit card after the fraudulent transfer, the withdrawal is not an act of larceny (despite the permanent asportation of the other person's money) because the perpetrator used his/her own card to remove the money.[28]

Caption, Asportation, and the Specific Intent to Deprive

Although the concept of property is very broadly defined in the MPC and various American jurisdictions, its unauthorized taking still rarely fits within the definition of larceny because it is hard to satisfy the common-law elements of caption ("taking") and asportation ("carrying away"). The traditional definition of larceny requires the defendant to take and carry away or exercise control over the property by illegal means. Applying these caption and asportation elements to the theft of digital information creates many difficulties, as Raymond Nimmer has noted:

> Reading, copying or memorizing information appropriates value, but leaves the information exactly where it began, in the possession of the owner. The belief that information theft is a crime led early criminal law to strained attempts to extend the idea of "taking" to exclude the necessity that the owner be deprived of the property or to look closely for peripheral copies taken by the criminal to fit this requirement. In the absence of these fortuitous events, taking information or services under older criminal statutes was not theft.
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> Traditional theft statutes also required that the defendant intend to permanently deprive the other party of the property. Copying a [com-

27. *See* KPC art. 243.

28. Supreme Court [S. Ct.], 2008Do2440, Jun. 12, 2008 (S. Kor.).

> puter] program or data does not meet this standard because the original owner is not permanently deprived of the program or data, but merely loses some control of the property.[29]

In other words, when intangible property is "taken," the owner generally still possesses the property and may continue to use the information or idea.

III. JUDICIAL AND LEGISLATIVE REPSONSES

Confusion Surrounding Criminal Law in the Digital Era

Korea

Many cases reflect the disjunction between this online theft of information and the traditional criminal law. For example, imagine that large amounts of cyber money, initially purposed for online gambling, have instead been transacted off-line and used as a way to money-launder illegal profits. The crime of illegal gambling may only be committed with the use of real cash (property). Nonetheless, the Korean courts have decided that the use of cyber money on, and the operation of, illegal online gambling sites can be prosecuted under existing criminal gambling statutes.[30] This is despite the fact that cyber money is a form of electronic information electronically created by a program – not property, as is usually required as an element of an illegal-gambling conviction.

In a different case involving the forgery of a cell phone subscription form that was then scanned as an image file and e-mailed to a third-party, the Court ruled that the act of enabling a third-party to view the resulting image file on a computer screen could be viewed as the act of utilizing the forged subscription form. Such conduct was legally sufficient to constitute the crime of using a false document,[31] even though the scanned-image file itself did not meet the definition of "document" in the corresponding criminal code. The Court said that the act of electronically sending a file that is not a "document" constituted the crime of using a forged document; such reasoning is, needless to say, problematic.

Today, the documentary character of electronic commerce is already widely accepted in Korean administrative law. For example, cyber money is treated like real cash by many Internet game users, so that, for sales-tax purposes, a ten percent value-added tax is levied on cyber

29. *See* Raymond Nimmer, The Law Of Computer Technology: Rights, Licenses, Liabilities P12.08 (3d ed. 1997); *see* also Lipton, *supra* note 2, at n.92.

30. Supreme Court [S. Ct.], 2001Do5802, Apr. 12, 2002 (S. Kor.); Supreme Court [S. Ct.], 2002Do6303, Sep. 5, 2003 (S. Kor.).

31. Supreme Court [S. Ct.], 2008Do5200, 2008 (S. Kor.).

money similar to the tax rate applied for tangible goods.[32] On the other hand, in the context of the criminal law, because Article 243 of the KPC stipulates that computer-program files do not constitute documents, drawings, films, etc.,[33] the Korean Supreme Court held that an act of selling computer files containing illegal pornographic material over the Internet did not establish the crime of illegally distributing pornographic material.[34]

Further confusion results from contradictory decisions by the Korean Supreme Court in cases involving similar legal intrusions. One case involved the theft of a compact disc containing unit prices for dealers of vessel-engine parts, as well as business secrets and business "know-how" for such entities. The Korean Supreme Court concluded that the theft of the compact disc was larceny because it was done with the purpose of gaining unlawful profit.[35]

In other similar factual situations, however, the Korean Supreme Court has held that information cannot be regarded as property to satisfy the elements of larceny. In a case in which an employee took a drawing of a textile rubber-coating system design and a manufacture-process chart from a computer from his research and development lab with the purpose of giving it to another person, the Korean Supreme Court held:

> The element of larceny is limited to property, including energy subject to human control, and, to establish the crime of larceny, the owner or other possessor of property excludes the possibility of possession or use, and there must be the act of exclusive taking away from under one's possession. Thus, information saved in the computer itself cannot be considered to be a material thing, and also it is not energy with materiality thus it is not considered to be property. Also, even if it is being copied or printed, it does not decrease the availability of information or possibility of possession and use, and thus such act of copying or printing does not constitute the crime of larceny.[36]

The Court reached this conclusion despite the fact that the drawing in question had been exclusively developed by the company, was not known to others outside the company, had economic value at the time the damage occurred, and the company made its best efforts in managing them secretly.

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32. The Seoul Administrative Court rejected the claim that cyber money was simply intangible computer code. *See* Seoul Administrative Court [Admin. Ct], 2009Guhap4418, Aug. 28, 2009 (S. Kor.).

33. Article 243 provides: "Any person who distributes, sells, lends, openly displays or shows any obscene documents, drawings, pictures, films or other things, shall be punished by imprisonment for less than one year or by a fine not exceeding USD 5000." KOREAN PENAL CODE [hereinafter "KPC"] art. 243 (S. Kor.).

34. Supreme Court [S. Ct.], 98Do3140, Feb. 24, 1999 (S. Kor.).

35. Supreme Court [S. Ct.], 2008Do5364, Sep. 11, 2008 (S. Kor.).

36. Supreme Court [S. Ct.], 2002Do745, Jul. 12, 2002 (S. Kor.).

Consequently, as Korean law now stands, if one steals information contained on a compact disc, such action constitutes larceny; but if one copies or prints the information itself, such action does not constitute larceny. The result is a problem of disproportionality among unlawful acts and their requisite criminal liability. For instance, if an individual steals documents containing business secrets worth one million dollars or a disc containing the designs for semi-conductors worth one-hundred million dollars, the criminal law proscribing larceny can punish only for the theft of the documents or the disc but not for the value of the information contained therein (the business secrets or designs).[37]

Although such cases clearly show the need for criminal laws that can be appropriately applied to new forms of criminal activity arising from the advent of the digital age, they also show that the Court has not yet been able to put forth a uniform and clear standard regarding the application of existing criminal laws to cybercrimes. These cases also highlight the potential problems with the creation of what appear to be "new" crimes through the process of analogical interpretation which is not permissible under the principle of legality.[38]

Between 1985 and 1992, the Korean Ministry of Justice proposed a series of amendments to the KPC to create computer-specific crimes. By 1995, several new computer-specific crimes had been created by statute.[39] The main computer-specific amendments to the KPC are as fol-

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37. This distinction plays out in a variety of examples across Korea. For example, one defendant, upon resigning from his company, took company resources related to firewall-program development: "com20 proposal," "idc-shield introduction," and "is8000r proposal," which were stored in the hard disc of his work computer and copied those files to a compact disc. The Seoul District Court concluded that his actions did not constitute the crime of larceny. *See* Seoul District Court [Dist. Ct.], 2001No942, July 18, 2001 (S. Kor.). In another case, an employee copied work documents drafted by other employees, returned the original, and removed only the duplicate, and the Korean Supreme Court held that the taking of the copied documents was not larceny. *See* Supreme Court [S. Ct.], 95Do192, Aug. 23, 1996 (S. Kor.).

38. The creation of new crimes through the process of analogical interpretation is generally prohibited under the principle of legality. *See, e.g.,* United States v. Hudson and Goodwin, 11 U.S. 32, 33-34 (1812).

> The only ground on which it has ever been contended that [the jurisdiction of the courts] could be maintained is, that, upon the formation of any political body, an implied power to preserve its own existence and promote the end and object of its creation, necessarily results to do it . . . If it may communicate certain implied powers to the general Government, it would not follow that the Courts of that Government are vested with jurisdiction over any particular act done by an individual in supposed violation of the peace and dignity of the sovereign power. The legislative authority of the Union must first make an act a crime, affix a punishment to it, and declare the Court that shall have jurisdiction of the offence.

39. There have also been subsequent enactments of special laws (codified outside of the Penal Code) regulating crimes using computers, including: the Act on Promotion of Information and Communication Network Utilization and Information Protection, the Copyright Act, and the Protection of Communications Secrets Act. *See* Act on Promotion of

lows: (1) the addition of crimes prohibiting the unlawful manipulation of resources, forgery of public and private electronic records, and alteration, forgery, and fraud by use of computer;[40] (2) the addition of crimes relating to the destruction of computers, including the crimes of interference with business by destruction of computers and criminal damage in destroying electronic records; and (3) a provision criminalizing the invasion of confidential information by technical tools.[41]

Prior to these amendments to the KPC, fraud by use of a computer was effectively legal because the act of manipulating the information could not be construed as acquiring property by deceiving a person and/or misidentifying oneself.[42] Furthermore, the direct object for fraud by use of a computer is limited to property interest, not property. For example, if an individual has been issued a credit card by unlawfully using another person's name and withdraws cash from an ATM using that card, such cash is property, not an interest that the individual acquired from property. As such, there has been no fraud by use of a computer.[43] Thus, the act of taking information does not establish the crime of fraud by use of a computer based under the Court's current interpretation of the KPC.

China

Since the 1979 penal code was amended in 1997, Chinese criminal law contains a specific provision regarding the property element for the

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Information and Communication Network Utilization and Information Protection, Act No. 3848, May.12, 1986, *wholly amended by* Act No. 6360, Jan. 16, 2001, *last amended by* Act No. 10166, Mar. 22, 2010 (S. Kor.), *available at* http://unpan1.un.org/intradoc/groups/public documents/UN-DPADM/UNPAN042825.pdf; Copyright Act, Act No. 432, Jan.28, 1957, complete revision Act No. 3916, Dec.31, 1986, last amended by No. 10807, Jun. 30, 2011 (S. Kor.), *available at* http://www.moleg.go.kr/main.html; Protection of Communications Secrets Act, Act No. 4650, Dec. 27, 1993, *last amended by* Act No. 9819, Jan. 26, 2002 (S. Kor.), *available at* http://www.moleg.go.kr/main.html.

40. The KPC provision outlawing fraud by use of computer was based on Section 263a of the German Penal Code [hereinafter "StGB"]; however, unlike the StGB, the KPC originally regulated only the acts of entering false information or unlawful orders and did not regulate the unauthorized use of data and other unauthorized exercises of power ("durch unbefugte Verwendung von Daten oder sonst durch unbefugte Einwirkung auf den Ablauf"). *See* KPC art. 347-2 (S. Kor.); StGB sec. 263a (Ger.). This omission gave rise to issues regarding the potential for analogical interpretation, and, as a result, the KPC was explicitly amended in 2001. *See* Taehoon Ha, *Illegal Use Of ATM In Criminal Interpretation*, 4 Study Crim. Cases 335 (1996); Hyungjoon Kim, *Cybercrime & Current Criminal Law*, 10 Internet L. 29, 29-31 (2002); Youngwhan Kim, *Difficulties With Illegal Use Of Credit Card In Criminal Interpretation*, 3 Study Crim. Cases 318 (1995).

41. Youngkeun Oh, *Internetcrime,* 54 J. Criminalpolitic 299, 304-305 (2003).

42. Oh, Criminal Law, *supra* note 8, at 433; Wessels/Hillenkamp, *supra* note 15, at 598-600.

43. Supreme Court [S. Ct.], 2002Do2134, Jul. 12, 2002 (S. Kor.); Supreme Court [S. Ct.] 2003Do1178, May 13, 2003 (S. Kor.).

crime of invasion of property. Following the development of science technology, energy (including the intangibles of electricity, gas, natural gas, heat, cold air and wireless phone numbers) has been recognized to be an object of criminal activity under Chinese criminal law because it can be controlled by an individual.[44] The scope of interpretation of this provision is very broad: illegal copying or taking of a long-distance phone number, communication cables, or telegraphic numbers of another and the use of illegally copied communication cables and facilities can be punished as unlawful takings.[45]

The United Kingdom

British courts have been reluctant to treat intangible property as property under theft law. The property element does not necessarily extend to all intangible property, such as information. In *Oxford v. Moss,* for example, the Queen's Bench Divisional Court held that the information contained in a stolen (but returned) university exam was not property for the purpose of a theft prosecution.[46]

The United States

Similar issues have arisen under the National Stolen Property Act ("NSPA") in the United States. In *United States v. Brown*, the defendant was charged with violating the NSPA for allegedly stealing a computer program and source code. [47] The defendant moved to dismiss the indictment for failure to state an offense, and the United States District Court for the District of New Mexico agreed. On appeal, the United States Court of Appeals for the Tenth Circuit affirmed the dismissal, holding that a computer program was intangible intellectual property and, as such, did not constitute stolen goods within the meaning of the NSPA.[48] The Tenth Circuit's holding in *Brown* leads to the strange "result of pun-

44. Sungsu Kim, *Relationship on the property in civil law and criminal law*, 5/2 POLICE L. REV. 113, 127 (2007).

45. PRC PENAL CODE §265 (1997).

46. Oxford v. Moss, [1979] 68 Cr. App. Rep. 183 (Q.B.D.)(Eng.). The defendant, Moss, was a student at the University of Liverpool. He obtained an advanced copy of his upcoming civil-engineering exam, read it, and replaced it before the exam was administered. The parties stipulated that, because he had always intended to return the original copy of the exam, he could not be convicted of theft of the exam itself. The prosecution asserted, however, that the information contained within the copy was intangible property capable of being "stolen" under §4 of the Theft Act of 1968. The court rejected that argument, holding that information contained within the exam could not be deemed to be intangible property and therefore was incapable of being stolen within the meaning of the Theft Act.

47. United States v. Brown, 925 F.2d 1301, 1302-03 (10th Cir. 1991).

48. *Id.* at 1308-09.

ishing theft via a particular medium regardless of the message."[49] "For example, assume Thief 1 uses his own diskette to steal a computer file worth $10,001, and Thief 2 steals a diskette worth $1 containing a file worth $10,000. Under [*Brown*], Thief 2 may be prosecuted under the NSPA for theft of $10,001 worth of property, while Thief 1 may not be prosecuted," even though their conduct is the same in terms of moral culpability.[50] For this reason, the United States District Court for the District of Arizona declined to follow the Tenth Circuit's interpretation in *United States v. Alavi*.[51]

While American courts rarely recognize the crime of theft of information, there are a few counter examples. In *United States v. Riggs*,[52] the Government prosecuted the defendant under the federal wire fraud statute[53] and the federal statute prohibiting interstate transportation of stolen property[54] for engaging in a scheme to defraud the telephone company by stealing proprietary information contained in "911" computer text files, transferring it across state lines, and publishing that information in a computer newsletter.[55] In denying the defendant's pretrial motion to dismiss the indictment, the United States District Court for the Northern District of Illinois held that confidential information was property.[56] The court noted that the statute was enacted to cover all stolen property worth at least five thousand dollars and that the computer file containing business information satisfied the value requirement.[57] Thus, the District Court decided the property issue on the basis of whether it

49. Todd H. Flaming, *The National Stolen Property Act and Computer Files: A New Form of Property, a New Form of Theft*, 1993 U. CHI. L. SCH. ROUNDTABLE 255, 270.

50. *Id.*

51. United States v. Alavi, No. CR-07-429-PHX-NVW, 2008 WL 1971391 (D. Ariz. 2008). The *Brown* and *Alavi* courts were both attempting to follow the Supreme Court's decision (or lack thereof) in Dowling v. United States, 473 U.S. 207 (1985). In *Dowling,* the Supreme Court considered a related, but not identical question: whether bootleg phonograph records transmitted across state lines were "'stolen, converted or taken by fraud' for purposes of § 2314." *Id.* at 216. The indictment was "founded exclusively on the allegations that the shipped phonorecords, which contained 'Elvis Presley performances of copyrighted musical compositions,' were 'stolen, converted and taken by fraud, in that they were manufactured without the consent of the copyright proprietors.'" *Id.* at 215 n.7. Because the case presented "[no] theory of illegal procurement" of the musical compositions, the court expressly declined to consider that theory as a basis for upholding Dowling's conviction. *Id.*

52. United States v. Riggs, 739 F. Supp. 414 (N.D. Ill. 1990).

53. 18 U.S.C. § 1343 (2011).

54. 18 U.S.C. § 2314 (2011). Section 2314 provides, in relevant part:

> Whoever transports, transmits, or transfers in interstate or foreign commerce any goods, wares, merchandise, securities or money, of the value of $5,000 or more, knowing the same to have been stolen, converted or taken by fraud . . . [s]hall be fined under this title or imprisoned not more than ten years, or both.

55. *Riggs,* 739 F. Supp. at 418-19.

56. *Id.* at 423.

57. *Id.* at 421-22.

had market value. The District Court also refused to distinguish between information stored on paper or disk (which precedent had held was property) and information stored electronically in a computer's hard drive.[58]

Federal appellate courts have had several occasions to address the definition of stolen "property" as it applies to tangible government documents in situations in which such documents have been photocopied (and the photocopies containing the intangible information from the originals have been removed) without authorization, but the original (tangible) documents were left in the government agency. In *United States v. DiGilio*,[59] the United States Court of Appeals for the Third Circuit concluded that duplicate copies are still "records" of the United States and that the unauthorized removal of copied FBI violated the statute proscribing the conversion of government "records."[60] In *United States v. Girard*,[61] a case involving the unauthorized removal of information from a computer file at the Drug Enforcement Administration (DEA), the United States Court of Appeals for the Second Circuit reached a similar conclusion, holding that information that was printed using the DEA computer system and removed from the office by an employee was property for the purpose of the same statute.[62]

Nonetheless, the idea that intangible property should be protected by theft statutes is gaining popularity. For instance, the Economic Espionage Act (EEA) imposes criminal penalties on anyone who "steals, or without authorization appropriates, takes, carries away, or conceals, or by fraud, artifice, or deception obtains" any trade secret related to a product in interstate business.[63] And the No Electronic Theft Act (NET Act) establishes aggravated criminal penalties for various violations of the copyright law, including the receipt of "anything of value."[64]

In addition to the diverse federal statutes criminalizing the misappropriation of intangible property, some states have enacted statutes to protect against the theft or use of intangible property or revelation of

58. *Id.* at 421.

59. United States v. DiGilio, 538 F.2d 972 (3d Cir. 1976).

60. *Id.* at 976; *see generally* 18 U.S.C. § 641 (2004). In *DiGilio*, the photocopying was performed on government equipment using government supplies. An FBI clerk-typist copied the original documents related to an investigation of DiGilio "during her working hours and with government papers and copying equipment. The original records were returned . . . to the proper files." The clerk-typist then removed the copies from the office. DiGilio eventually received the copies through a series of middlemen. These activities were conducted frequently over approximately a six-month period. *DiGilio*, 538 F.2d at 976. In 1979, the United States District Court for the District of Columbia followed the rationale of *DiGilio* in United States v. Hubbard, 474 F. Supp. 64 (D.C. Cir. 1979).

61. United States v. Girard, 601 F.2d 69 (2d Cir. 1979).

62. *Id.* at 70.

63. 18 U.S.C. § 1832 (a) (1996).

64. 17 U.S.C. § 101 (1997); *see* 17 U.S.C. § 506 (a) (1997).

another's trade secrets.[65] These federal and state statutes vary greatly in their range and penalties. Some states have criminal codes that specifically mention trade secrets or utility services.[66] Others have general criminal statutes broad enough to cover trade secrets without specifically enumerating them, use civil codes like the Uniform Trade Secrets Act to confer protection, or both.[67] In other states, the scope of protection is limited to the theft of tangible items.[68]

Special Legislation for Digital Property

Intangible digital objects and other types of information are already regulated under several laws. Theft of traditional forms of intellectual property, such as inventions, utility models, designs, trademarks, and copyrights is subject to criminal regulations specific to those media. However, even in the area of intellectual property law, because of the constant development of digital technology, new types of intellectual property are created almost every day that are not subject to the protection of existing intellectual property laws. Laws such as the Framework Act on Electronic Commerce and the Online Digital Contents Industry Promotion Act are focused on the support and promotion of relevant industries and government policies that promote the growth of such industries rather than providing a legal framework for normative and legal guidelines in electronic transactions of digital information.

IV. THE SCHOLARLY LITERATURE

Recognition of the Crime of Theft of Intangible Digital Property

Some scholars have argued that current criminal statutes should not be used to prosecute virtual-good thefts because it might prove too difficult, impractical, or impossible. Michael Carrier and Greg Lastowka argue that, because of the civil law's fundamental characteristics, cyberproperty cannot be confirmed by the ideas of "Locke's labor theory, Hegel's personhood rationale, or general utilitarian justifications."[69]

65. John R. Grimm, et al., *Intellectual Property Crimes*, 47 Am. Crim. L. Rev. 741, 757 n.123 (2010).

66. *See, e.g.*, Cal. Penal Code §§ 498 (2010) (defining and proscribing penalties for the theft of utility services), 499c (1997) (criminalizing the theft of trade secrets).

67. *See, e.g.*, N.H. Rev. Stat. Ann. § 637:2(I) (1996) ("'Property' means anything of value, including . . . trade secrets, meaning the whole or any portion of any scientific or technical information, design, process, procedure, formula or invention which the owner thereof intends to be available only to persons selected by him."); Utah Code Ann. § 76-6-401(1) (2003) (same); *see generally* Grimm, *supra* note 65, at 757 n.125.

68. *See, e.g.*, Ga. Code Ann. § 16-8-13 (1995).

69. Michael A. Carrier & Greg Lastowka, *Against Cyberproperty*, 22 Berkeley Tech. L. J. 1485, 1500 (2007).

They also argue that the concept of cyberproperty is not supported by property's rationales and lacks effective limits.[70]

Alex Steel has argued that the crime of theft does not apply to intangible property.[71] Over time, the simple *actus reus* of theft of a certain form of (tangible) property is now becoming broad and uncertain. Even if property rights exist in intangible cyberproperty, it is not easy to find out whether a theft of such property has occurred because the right to the property could be appropriated or the owner indissolubly deprived of it. He argues that it is undesirable to maintain an offense that includes forms of property within the offense definition but then removes them by reliance on another element. In most instances, the appropriation of a choice in action amounts to a form of fraud not theft.[72]

Geraldine Moohr has argued that "the criminal law forum is an inadequate one in which to consider the policy implications of creating property rights in information" because intangible property is unformed and shapeless.[73] In other words, because intangible property cannot be considered chattel, it should not be subject to property protection. As a result, intangible property cannot be subject to criminal theft statutes because theft of intangible property does not deny the plaintiff the right to possess, use, and enjoy the *res* (even though the victim of such taking may lose her right to exclude other from such property). Also, the theft of intangible property only causes damage to the value of the property but does not deny the plaintiff its actual possession and use.[74]

On the other hand, there are diverse opinions that insist that intangible property should be included as the subject of theft. Stuart Green claims that theft law only protects things that are able to be bought or sold. Theft law bans the misappropriation of any "thing of value," which refers to both tangible and intangible property.[75]

According to Andrea Vanina Arias, virtual goods in Massively-Multiplayer Online Role-Playing Games ("MMORPGs") "fit the five characteristics of chattel property: the abilities to (1) possess; (2) use; (3) enjoy; (4) transfer; and (5) exclude others (also defined as 'rivalrousness')".[76] Further, "if a player possesses a particular virtual good, other people do

70. *Id.* at 1500-12.

71. Steel, *supra* note 26, at 612-13.

72. *Id.*

73. *See* Geraldine Szott Moohr, *Federal Criminal Fraud and the Development of Intangible Property Rights in Information*, 2000 U. ILL. L. REV. 683, 686 (2000).

74. *See id.* at 692-93.

75. Stuart P. Green, *Plagiarism, Norms, and the Limits of Theft Law: Some Observations on the Use of Criminal Sanctions in Enforcing Intellectual Property Rights*, 54 HASTINGS L. J. 167, 216 (2002), *available at* http://faculty.law.lsu.edu/stuartgreen2/j-green2.pdf.

76. Arias, *supra* note 20, at 1315.

not possess that same good."[77] If only one person uses a virtual good, then other players are not able to use or enjoy it at the same time. A person can definitely transfer virtual goods to other players. "Finally, a person can exclude others from using their virtual goods."[78] Therefore, virtual goods, under current state penal statutes, should be classified as "property." Moreover, virtual goods must be afforded the property rights of chattels for their owners to be protected effectively from theft. As a result, jurisdictions in the United States could use current criminal theft statutes to prosecute the theft of virtual goods.[79]

Joshua Fairfield broadens the definition of property rights and how they should extend to virtual worlds. Fairfield asserts that there are three "characteristics that virtual property shares with real property" that define when virtual resources should be infused with property rights: (1) rivalrousness, (2) persistence, and (3) interconnectivity.[80] Fairfield also attempts to summarize virtual resources within his concept of a "code." This concept is not one of code in the programming sense, but rather code-based objects, such as accounts, virtual land, and items in virtual worlds.[81] If one person owns and controls them, others do not. They do not go away when the computer is turned off.[82]

Stuart Green argues that something is a "thing of value" for purposes of theft law if and only if it is "commodifiable," which he defines as "capable of being bought or sold."[83] The term "property," therefore, denotes nothing more than a bundle of rights, a legal construct.[84] Using this definition allows digital property to be located within a unified concept of property as long as the digital property in question has economic value and is marketable.

Todd H. Flaming has argued that, in an era in which computers will soon replace paper as the medium of information storage, the simple recognition that cases involving the theft of digital information involve a new form of property and a new form of theft, in which physical possession is no longer relevant, is inevitable.[85]

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77. *Id.* at 1315-16.

78. *Id.*

79. *Id.* at 1344-45.

80. *See* Joshua A.T. Fairfield, *Virtual Property*, 85 B.U. L. REV. 1047, 1053-55 (2005), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=807966.

81. *Id.* at 1077-78.

82. *Id.* at 1049.

83. Green, *supra* note 75, at 218.

84. *Id.* at 212; *see also* John William Nelson, *The Virtual Property Problem: What Property Rights in Virtual Resources Might Look Like, How They Might Work, and Why They Are a Bad Idea*, 41 MCGEORGE L. REV. 281, 287 (2010), *available at* http://www.mcgeorge.edu/documents/publications/mlr/Vol_41_2/04_Nelson_ver_09_FINAL.pdf; *see e.g.,* Kaiser Aetna v. United States, 444 U.S. 164, 176 (1979) (viewing property as a "bundle of rights").

85. Flaming, *supra* note 49 at 290-91.

Several Korean scholars have also argued in favor of expanding the definition of property subject to the criminal law of theft. Daehun Bae has proposed that expansion without statutory revision can be borrowed from civil law by recognizing the crime of theft of intangible property by applying the constructive-possession (or semi-possession) concept of civil law to the criminal law. Under this proposal, property in criminal law would follow the concept of 'thing' defined in the civil law.[86] He argues that there are no normative differences between property in civil and criminal law.

The concept of property under the criminal law of theft is based on the potential ability to manage or exercise dominion. "Dominion" presupposes that the owner can use, make a profit, or dispose of the thing in question. A thing in civil law is an object that can be subject to an action for property rights, and it can be dominated or managed depending on the legal possessor's exercise of his/her power to use, make profits, and dispose thereof. Rights in property law are not limited to the material objects. Article 210 of Korean Civil Code protects interests other than the object itself as semi-possessions, such as possession pursuant to which one actually dominates the object. The objects for constructive possession are intellectual property and the right to receivables. In other words, he argues that digital information should be protected in the same way pursuant to both civil and criminal laws.[87] Thus, when Article 346 of the KPC says that "[e]nergy that is subject to human control shall be deemed to be property," energy can be regarded as property that is in fact not property. If, however, intangible materials under human control can be regarded as property, it is not necessary to distinguish energy among the intangible materials, and Article 345 can be interpreted instead merely as an illustrative provision. Insu Whang has argued that the materiality of digital property can be recognized on the basis that information saved in a computer is subject to the physical management of the owner's operation.[88] Haesung Yoon has argued that property should not be limited property to energy subject to human control, but rather extended to include the property value of all material under human control.[89]

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86. Minbup [The Korean Civ. Code] art. 98 (S. Kor.) (For example, Korean Civil Code Article 98 provides: "[T]hings mentioned in this Code shall mean material things, electricity, and other manageable natural forces.").

87. *See* Daehun Bae, *Digital Information & Extension of Property Concept*, 14 J. COM. CASES 301, 344-45 (2003).

88. *See* Insu Whang, The Property Concept in Criminal Law 38 (Dec. 2006) (unpublished dissertation, Sungkyunkwan University) (on file with author); *see also* Hyunggak Lee, Property in Criminal Law 11 (Dec. 1998) (unpublished Ph.D. dissertation, Yonsei University.

89. *See* Haesung Yoon, *Risk, Society of Information, & Criminal Law*, 28 INTERNET L. 84 (2005).

Broad Legislation Regarding Theft of Digital Property

Korean scholars have also asserted that the concept of property under the criminal law should not only include tangible objects and manageable power but also radio waves, lasers, ray-light energy, and documents and items in electronic form.[90]

V. THE CRITIQUE

Information as Property

The information society represents a paradigmatic shift from a natural resource-based economy that centers on the three traditional elements for production in an information-based economy: land, labor, and capital. The result is that information value and digital property have taken on the role of a major commodity and production element.[91] Ultimately, this may result in the birth of legal interests in newly developing areas like free access to intangible property, which will require an entirely different legal theory of larceny that is not based on tangible objects. Even though the law may not surpass today's rapidly changing information society, it needs to be flexible and adjust to the changes of society. From a criminal law perspective, when the protection of an object by the criminal law varies from tangible objects to intangible information, this allows criminal activity impunity when it is committed using computers and other machines, even though the identical action committed by an individual in-person would be a crime.

One common response to this problem, by legislatures, courts, and commentators, has been to regulate, or propose the regulation of, the unauthorized taking of digital information as larceny of digital "property." There are four problems with this solution. First, digital information does not fit well into preexisting common law and statutory definitions of property. Second, the unauthorized use of digital information rarely, if ever, satisfies the asportation ("taking and carrying away") and specific-intent ("with the intent permanently to deprive" elements of larceny/theft). As a result, the only way to fit "stealing" digital information into a general larceny/theft crime would be to water down those elements for all larcenies/thefts; a classic example of using a bazooka to swat a fly.

Third, it is difficult to define the scope of the "information" that should qualify for protection as property. The concept of intangible digital property can be even more artificial than the concept of physical prop-

90. *See* Taeyoung Ha, *An Argument for the History of "Property" in Korean Criminal Law*, 5/2 J. Comp. Crim. L. 279, 318 (2003).

91. *See e.g.*, Nelson, *supra* note 84, at 287 (According to a recent White Paper from the Korean National IT Industry Promotion Agency, the Korean software market was worth approximately $77.2 billion in 2010.).

erty. For example, inventions, utility models, designs, and marks are called industry information. New information, including any data acquired during a transaction saved on a computer in the form of digital materials, or transferred to others by information-communication networks, could be treated as digital information.[92] The difficulty of defining intangible digital property is aggravated by the fact that the concept of property generally has a problematic history of inexact meaning.[93] Theft law generally prohibits the misappropriation of "anything of value" – a term that refers in its expansive, modern form, to both tangible and intangible property.

Fourth, expanding the current definition of property to include digital property containing important information for the purpose of theft prosecutions can, at least in many jurisdictions, only be done by analogical judicial interpretation extending statutory definitions of theft to contexts that their drafters did not imagine.[94]

Special Legislation for Digital Property

The discussions concerning simple claims for damages and penalties based on civil law and the government's right to punish illegal conduct is entirely different, with different legal effects on the lives of citizens and individuals, their self-consciousness, and society as a whole.[95] One reason why it is necessary to approach this issue from the perspective of general criminal law is because this issue is not a disconnected, one-time event. Rather it is a universal social issue in an information-based society. To regulate this issue within the scope of general law means that it will be recognizable (at least constructively) with common knowledge. A specialized law only purporting to regulate within a narrow legal realm would not be familiar to lay individuals. This may be one reason why many individuals are not aware of the illegality of their behavior when they illegally download, upload, or attach links to files protected by law. This can only result in the violation of individual rights and impair the preventive role of criminal law because it does not provide the individual with an expectation of punishment upon its violation.

A second reason why it is necessary to approach this issue from the perspective of the general criminal law is that the legal purpose of some specialized laws is not refined enough. Many specialized laws are enacted and executed based on notions of administrative expediency, which

92. *See* Daehun Bae, *supra* note 87, at 307.

93. *See* Nelson, *supra* note 84, at 284-85.

94. *See* Seunghee Hong, Protection and Limit of Information-Property, Korean Institute of Criminology 115 (2005).

95. For an excellent discussion of the policy reasons for allowing some form of criminal-law control over the theft of virtual goods, *see* Arias, *supra* note 20, at 1337-38.

decreases the opportunity for academic examination and vetting.[96]

A third reason why it is necessary to approach this issue from the perspective of the general criminal law is that a penal regulation comprising multiple specialized laws, rather than one uniform general one, creates the possibility that the normative purpose of the different laws conflicts with one another and an opportunity for uniformity of legal norms within society is lost. Moreover, issues concerning the interpretation of criminal law, such as the conflict and contradiction between property and property interests and the documentary quality of digital files, constantly occur across a broad spectrum of types of theft of digital property.

Broad Legislation Regarding Theft of Digital Property

The problem with broad language governing the theft of digital property is that it may breed the endless expansion of related subject matter. What types of digital information should be protected by criminal legal systems? Unlike the terms of entry in physical establishments, cyberspace "Terms of Use" are often extraordinarily broad and grant extraordinary rights to the proprietor.

VI. PROPOSAL:

A UNIFORM THEORY OF THE CRIME OF UNAUTHORIZED USE OF DIGITAL INFORMATION

While there was controversy about whether electricity could be subject to the crime of larceny in the early twentieth century, one hundred years later, there are no doubts that the theft of electricity is a crime, both by statute and court decision. It is difficult to interpret electricity as an object of common-law larceny because it is difficult to imagine a scenario in which an electricity thief would satisfy the element of taking and carrying away. Thus, electricity theft can only be understood as an act of unlawful use of intangible materials.

For the historical, logical, and teleological meaning of property in criminal law, it would be proper to consider property as intangible materials that cannot be included in the meaning of tangible property if they have the potential of being subject to human control in a similar degree as tangible materials in situations in which society requires intangible ones to have the same protection.[97] Such thefts would not constitute larceny because intangible materials are subject to human

96. *See* Sanggi Park, Theory of Special Criminal Law, Korean Institute of Criminology 36 (2009).

97. *See* Jungwon Lee, *A New Point of View on Property Crime,* 5/2 J. Comp. Crim. L. 679, 681-82 (2003).

physical control, but rather because such intangible materials should be legally protected to the same degree as tangible property because of their potential for being subject to human physical control.

In 1995, the concept of electronic recording was introduced to the criminal law in the KPC. At that time, it was understood that such electronic recordings were recordings saved in the form of electronic and magnetic waves and that such information had strong recording characteristics that were fundamentally identifiable. This is a good example of how, as information society advances, objectively controllable and relatively clear digital information can be included in the criminal law. The legislative intent for these statutory additions includes the recognition of the necessity of protection of scientific developments in situations in which controllable intangible materials are stolen.

Nonetheless, it is difficult to regard electricity and digital property as the same kind of direct object of theft crimes. With regard to electricity, it is easy to calculate any economic loss arising from its theft. Information, on the other hand, is an intellectual creation and the value of its loss (including the profits lost from the exclusive use thereof) is hard to measure or estimate. Thus, those advocating that digital property should be treated as a kind of property subject to larceny have been taking the wrong path by attempting to regulate larceny in criminal law by weighing whether digital property with economic value is property. Rather than examining whether digital property is worth protecting, it would make better sense to regulate the use of digital property because it is difficult to regard the unauthorized usage of digital property as an object of theft.

The KPC takes the position that a theft crime does not necessarily have to satisfy all the elements of traditional common-law larceny. Instead, it creates exceptions in which the proof of one or more of the traditional elements of larceny is excused in situations in which it is necessary to protect society as a whole. For example, Article 331.2 prohibits, *inter alia,* the unlawful use of automobiles.[98] This statute came into effect as automobile ownership became common to prevent the unlawful uses of another's car without consent. Because the crime of unauthorized use does not satisfy the "intention to permanently deprive" element of larceny, the statute provides compensation to the owner of the automobile to fill this legal gap.[99]

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98. Article 331.2 provides:

> Any person who uses temporarily another person's automobile, ship, air craft or motor-equipped bicycle, without consent of the person having the right to it, shall be punished by imprisonment for less than three years, fine not exceeding USD 5000, detention or a minor fine.

99. KOREAN MINISTRY OF JUSTICE, A STATEMENT OF REASON: PROPOSITION OF CRIMINAL CODE 174-75 (1992).

In our modern information-based society, there is no less necessity for the criminal law to protect against the unlawful use of information in digital forms than against the unlawful use of automobiles. Therefore, the crime of illegal use of digital information should be created by statute. In doing so, legislatures should consider the following factors:

(1) Whether the information in question is known to the public (*i.e.,* whether it can be acquired by means other than through the holder of the information);

(2) Whether the information is secured and under the management or control of its rightful holder; and

(3) Whether the information has independent economic value and whether its economic value has been diminished by its unlawful use.

Such an offense should require a complaint by the rightful holder of the information as an element for two reasons. First, there is potential for expansive prosecutorial discretion with a crime with such a broad definition as the unauthorized use of information would have. Secondly, this article proposes the creation of such crime as a means of protecting personal digital property rights as thefts because doing so is in the public interest. The article further recommends that such statutory crime be codified within the general criminal law (the penal code), rather than in a specialized statutory section (*e.g.,* an intellectual-property code).

With regard to the unauthorized use of telephone electromagnetic waves, the development of modern technology has made it possible to pirate the use of wireless phones. Since such waves are neither property nor manageable, they cannot be the object of a larceny. Since electromagnetic waves are intangible, its unauthorized use does not classify as theft, and so such taking also requires a specialized statutory solution.

VII. CONCLUSION

Developments in the criminal law of theft have closely reflected evolving concepts of property in civil law.[100] According to Jerome Hall's study of the history of laws related to theft, the increase in the complexity of social and economic organization was accompanied by the transformation of free goods (those existing in nature independently of any human effort and not appropriated by anyone) into economic goods. This transformation represented effort and acquisition. Goods so far as thus acquired and transformed became valuable and recognized as the "property" of the individuals who obtained or possessed them.[101] "As intangible property, such as licenses, franchises, and interests in stock, began to occupy an increasingly important place in the economy, it was not surprising that society would look to the criminal law as a means of

100. *See* Steel, *supra* note 26 at 582.

101. JEROME HALL, THEFT, LAW AND SOCIETY 100 (2d ed. 1952).

protection."[102]

Many types of digital properties generated online and through computers in late twentieth century have been used in the commission of crimes, but confusion has arisen in existing criminal-law systems as to how to regulate and prevent such thefts. If an individual creates false information, uses a computer without consent, or changes information without authorization and, in the process, acquires property or a property interest, such individual has committed computer fraud. The act of stealing important information, however, has proven more elusive to regulate as the crime of theft/larceny in criminal law. Existing efforts to fill in these legal gaps have been inadequate for many reasons and, absent statutory reform, will continue to be.

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102. Green, *supra* note 75, at 211.