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Tiruchirappalli – 620102

Phone : +91 94896 71437 - [info@ilededu.in](mailto:info@ilededu.in) / [Chairman@ilededu.in](mailto:Chairman@ilededu.in)



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## CRIMINAL PENALTIES FOR INTELLECTUAL PROPERTY CRIMES

**AUTHOR – DR. DEMA MATROUK ALOUN**, ASSISTANT PROFESSOR OF COMMERCIAL LAW, FACULTY OF LAW/  
ZARQA UNIVERSITY. CONTACT – [DALOUN@ZU.EDU.JO](mailto:DALOUN@ZU.EDU.JO)

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### Introduction to Intellectual Property Crimes

Criminal penalties for intellectual property crimes

Throughout the world, intellectual property (IP) systems, as well as the legal and regulatory framework in which they are applied, are designed to provide powerful incentives to stimulate commercial and cultural creativity. Their development during the 20th century has made intellectual property rights a central feature of domestic and international law. At the same time, intellectual property crimes have become progressively detrimental to legitimate IP interests. The health, safety, and well-being of consumers are also jeopardized by counterfeit trademark and other products. These threats reach their most violent form in the case of counterfeit medicines. State and industry anti-counterfeiting moves are currently being improved in the light of this evidence. In 2007, the United States ratified new IP rights, thereby placing additional obligation on the criminal and civil legal systems of the U.S. to address the issue of breaches of IP rights.

Although there are civil solutions for violation of intellectual property rights, one of the best methods to sustain and preserve societal integrity is by applying penal sanctions against counterfeiters and pirates. In the U.S., criminal sanctions for infraction of intellectual property rights are imposed under the Lanham Act, the Copyright Act, and the Trademark Act. Moreover, IP offences can be dealt with under several federal statutes. The federal government's main IP criminal civil enforcement ability and responsibility are in the U.S. Department of Justice, the FBI, and the U.S. Immigration and Customs Enforcement. We will concentrate on the U.S. criminal penalties in this article. Various forms of IP rights are shielded by the legal apparatus. There are three main groups of IP rights: – Patents: grants inventors the exclusive right to make, use, sell, and import their inventions. – Copyright: safeguards original works of authorship such as writings, music, and art. – Trademark: applies to symbols, names, and other distinguishable marks used to identify

the source of a good and distinguish it from other goods.

### 1.1. Definition and Types of Intellectual Property Crimes

According to the World Intellectual Property Organization (WIPO), "intellectual property (IP) refers to creations of the mind, such as inventions, literary and artistic works, designs, names, and images used in commerce, and protectable under patent, trademark, copyright, and trade secret laws." The Commercial Law Group of the Legal Advisory and Enforcement Board of the Bureau of Customs (CBLAEB) under the training held by EU Ambassadors in the subject matter defines intellectual property crime as the infringement or violation of laws that provide for an exclusive right to an intellectual asset, such as a copyright or patent, without the permission of the intellectual property owner.

Intellectual property crimes can be committed willfully, negligently, or through intentional



infringing acts of others to make profits from the data that they pirate. The types of property rights involved, the material we are concerned with, and the territorial location of illicit acts whether in the physical or virtual worlds have been classified differently. Car models or vehicle engines, for example, are examples of tangible and observable items. Whereas there is an original design (intellectual creation) of how a Volvo car should be, particularly the aesthetics, which results in the identity of the car which a customer recognizes easily. Mastercard payment solutions are a useful or a service that is likely to fit well. In the context of the internet, eBay, Amazon, or, in the case of Nigeria, Jumia, has an online shopping platform.

## 2. Laws and Regulations Governing Intellectual Property Crimes

What are the criminal penalties for intellectual property crimes in your country? Please include the applicable laws. Intellectual property crimes are a new rising type of white-collar crimes in China, and they refer to occupational rule breaking examined by the police affairs department and filed as cases of infringement, counterfeiting, and smuggling of a trademark, a copyright, a patent, and a new species plant (either type of right or other illegal MO according to the international regulations), unfair competition, the implementation of monopoly through intellectual property and counterfeiting. These kinds of criminal behaviors are also written in international regulations, the criminal or illegal punishment is done based on different laws, regulations, and frameworks of different countries.

The Trade Marks and G.I. Act, 2020, enacted on December 18, 2019, governs the criminal penalties for trademark counterfeit and theft of a trademark. Under this trademark regulation, those who infringe a registered trademark of any protective goods or service and commit any of the following acts shall be punished with imprisonment of 3 years or a fine not exceeding six million riel (approximately \$1,500) or with both: Unauthorized use of a registered

trademark in relation to such goods and services; or Making or possession of a counterfeit trademark for the purpose of making a profit. The penalty may be increased to imprisonment of five years or a fine of ten million riel (\$2,500) if the infringement causes significant physical harm or financial loss to a third party. The anti-counterfeit penal composed of Fine more than 2 years seven days and less than 3 years or only fine from 6 million to 10 million.

### 2.1. International Treaties and Agreements

The growth of the international trade in property relies, in part, on the security it can provide to brand names, patented items, and copyrighted items. Attempting to pass off others' trademarks as the genuine article is a global problem and requires international help. The World Customs Organization (WCO) registers thousands of brand names with its members to assist with the interdiction of counterfeit items. Some countries rely on international agreements to help identify items of value that are stolen. For example, members of Interpol receive lists of stolen cars, works of art, and items of archaeological importance from other nations and attempt to interdict such things when they enter their own nations' borders.

The relationship between the United States and the Soviet Union, called the "Treaty on Legal Assistance in Criminal Matters," defines the crimes that fall within the jurisdiction of the parties to the treaty. Pursuant to the United States-Soviet Union Agreement of 21 July 1997, each party received exclusive jurisdiction to prosecute the other's nationals for "crimes against property, including theft, embezzlement, and misappropriation; forgery, counterfeiting, and fraudulent use of money and securities; commercial swindles; and other crimes which fall under the jurisdiction of Title 18 of the United States Code." The Explanatory Note to the Treaty states that the parties to the treaty mutually designate the "crimes against property, including theft, embezzlement, and appropriation, foreign exchange offenses,



crimes involving the forgery of currency, securities, and state bonds, the fabrication or forgery of commercial or private documents, colonies and counters, counterfeit organization of money or securities as well as the use, exchange, and distribution of counterfeit money or securities created" as the offenses covered by the treaty.

### 3. Enforcement of Intellectual Property Laws

Little is ultimate or unchallengeable about the laws that govern the creation, allocation, distribution, and use of intellectual property. Governments legislate in intellectual property through myriad statutes and implement those statutes administratively through the issuance of regulations, providing for individual officials to use a considerable amount of discretion. The outcome of these discretionary decisions can often be challenged in national courts, with the cases in nation-states. As an administrative issue to be governed by discretionary judgments, which then may or may not be the substantive outcome upon which subject matter is protection. Courts, who act on a case-by-case basis, defining and creating the law of intellectual property, whether constituting or interpreting national laws adjudicated the outcome of disputes about intellectual property.

Enforcement of the laws of intellectual property is the third part of the story. As with other areas of law, governments sometimes assign exclusive rights in intellectual property and international obligations on intellectual property through the TRIPS agreement, so that they may be used and enforced within their jurisdiction. Constitution rather than through peace agreements ratified by their parliaments. The main purpose of the central application to enforce intellectual property laws is to secure the achievement of the allocative efficiency goals that functionalize in international IP regulation and free trade in services and reduce piratical behavior within the jurisdiction of file translation, download, communication of copyrighted works to the public and infringe concerning the prosecution of intellectual

property cases through the criminal justice system. The following sections describe this key study.

#### 3.1. Role of Law Enforcement Agencies

The enforcement of the law and legal remedies contribute significantly to the achievement of the statutory goals. The criminal law provides for a number of measures to punish people who do not comply with the provisions of the Act. According to Directive 2004/48/EC of the European Parliament and of the Council of 29 April 2004 on the enforcement of intellectual property rights, regarding the protection of intellectual property, the duties of law enforcement agencies must include the protection of intellectual property rights, not only in relation to the right to ownership, but also in relation to moral aspects. The provisions of this Directive prohibit the commercial use of the image of people who are still alive without their valid and explicit consent.

The protection of intellectual property rights includes the administration of justice in civil and commercial proceedings. The intellectual and industrial property law also includes the activity of law enforcement and controlling authorities operating within the criminal justice system, whose overriding duty is to investigate crime. It also has extensive powers to prevent and punish intellectual property crime. The implementation of intellectual property criminal law has certain specifics and distinctions, but it is essentially no different from the enforcement of other areas of criminal law. The procedures according to guiding existing laws and regulations are practically similar to most other criminal procedures. The enforcement and oversight of the institutions and bodies involved in the investigation are the responsibility of law enforcement agencies – both the public prosecutor's office and the court.

#### 4. Criminal Penalties for Intellectual Property Crimes

Intellectual property (IP) is known to be the intangible result of someone's thought and



creation, such as a trademark, copyright, industrial design, or patent. That means it is the product of intelligence and the brain. The prospect of benefiting from intellectual properties can encourage further development of human creativity. It is like a reward given by the public to every individual who has made a new creative idea that can help and give profit to society. Thus, the law seeks to ensure that those who create intellectual properties or develop intellectual work are able to enjoy it and get the full intention without any interference. Otherwise, individuals who have the motivation to develop a new design, creation, or invention are reluctant to do so because no comprehensive protection is available for the original owner.

There are two penalties or punishments by the court by which an infringer can be affected when they commit any of the above intellectual property crimes. The two types of penalties are: i. Imprisonment ii. Monetary fine

In addition to the penalties, the infringer can also be made liable for the actual damage suffered by the right-holder or the profit made by the infringer, as the case may be. The courts in Qatar take a serious view of intellectual property crimes because the country has no local products of goods covered by the industrial property laws. Therefore, a great deal of smuggling of foreign goods through counterfeiting of brands is carried out for commercialization. For this reason, when cases of intellectual property crime come before the Qatari judicial forum, the court gives harsh punishment to the offenders.

#### 4.1. Fines and Monetary Penalties

Criminal Penalties for Intellectual Property Crimes

##### 4.1. Fines and Monetary Penalties

A second key aspect of criminal repercussions for perpetrators of intellectual property crimes is fines and monetary penalties.

In the case of commercial intellectual property crimes, the monetary advantages for the

offender may be significantly greater than fines imposed against the person or company. Legal entities regulated by corporate law, e.g. companies, have their own wealth and can be fined if they do not act in conformity with the law. Fines then serve as a tool to force corporations to exercise more care when dealing with the property rights of others. There is reason to assume that differences in corporate structures and property rights legislation may lead to discrepancies in the application of criminal law against corporations and companies.

Where individuals are prosecuted for crimes they committed, fines can serve as a deterrent for the offender, and in the case of financial gain, it may be an appropriate way of depriving him of his pecuniary advantage derived from the crime. Penalties against individuals (often identified, prosecuted, and sentenced as "pirates" by various actors and in some cases for personal use of copied materials) have an appealing aspect as they have a more profound reflection of values and behavioral norms of society. Regardless of their use as a means to deter individuals from further criminal behavior, fines should have a dissuasive effect. Given that the profits made by criminals are often difficult to determine and prove, fines appear to be one possible way of preventing further intentional damage.

#### 5. Imprisonment and Sentencing Guidelines

The actual types of penalties criminals who commit piracy and counterfeiting can face are often misunderstood. Imprisonment is at the end of an often long and complicated process, and for both U.S. criminal and civil penalties, potential damages can be calculated and claimed in the form of "statutory" damages before the criminal is ever arrested. Although fines and restitution are the most common penalties, it is imprisonment that people most often associate with the punishment for crime.

As of 2022, a Federal Trade Commission website states that fines and restitution for criminal counterfeiting and piracy in the U.S. amount to a



maximum of \$5 million and \$250,000 for individuals (respectively). For many crimes, including piracy and counterfeiting, if the criminal is convicted of counterfeiting "for a terrorist organization" or if they counterfeit "military goods and services" (as defined elsewhere in Title 18, Part I, Chapter 113C of the United States Code), imprisonment may also be followed by supervised release.

Imprisonment as a punitive measure may be imposed for individuals who have committed copyright or trademark counterfeiting as well as business entities (corporations and their officers) convicted of importing counterfeit goods (see "Imprisonment for individuals" & "Bipartisan Unit Conversion Law"). As a punitive measure specifically intended for individuals, imprisonment is the penalty that most directly and prominently punishes the criminal in the mind of the lay person. Yet, in the context of intellectual property rights, data show that imprisonment is the least common criminal penalty imposed for counterfeiting and piracy and that, when imposed, it is most often for counterfeiting more than for piracy.

### 5.1. Factors Affecting the Severity of Sentences

The penalties frequently put into effect in intellectual property crime cases are normally determined by factoring in the 'extent of state damage' (i.e., the infringement of the copyright owner's exclusive rights) and the 'extent of profit' or 'harm' caused to the right holder(s). In addition to these two substantial factors, sentencing choices are also influenced by a variety of other conditions, including the manner in which the crime was committed, the mental state of the perpetrator, and the defendant's criminal record and character. In common law systems, the defendant's motive is not typically taken into account when determining the penalty, but under special circumstances, it is in some cases considered to be an aggravating (or mitigating) factor against the accused. Also noteworthy is the fact that, in the domain of IP, there are no laws explicitly designed to take account of prisoners'

rights or special regulations, and therefore to protect their economic interests, occupations and educational credentials.

With respect to specific facts that aggravate the accused person's legal status, in addition to committing repeated acts, which, as a rule, attract a more severe penalty, the following cases of fact must be recognized under the case law: there is the intention of putting a computer program into circulation and obtaining a financial gain in the form of the sale price with the criminal prosecution of it being foreseeable (fraud according to Section 248a of the Penal Code in conjunction with Section 263(3) of the Penal Code); there is the selling of particularly significant illegal game copies and, in addition, potential loss of profits can be proven; there are particularly significant Facebook counterfeit piracy cases that allowed parties to the proceedings to make profits at a value of at least 23,000 euros; there is causing physical destruction through concealing the malware in the form of a Trojan horse; classified information is spied on through concealed access, traces are expertly manipulated and, intentionally and in gross breach of duty, it is to be feared that the unregistered persons will gain access to the computer system.

### 6. Case Studies and Examples

Not all intellectual property crime cases result in severe criminal penalties for the accused. A case-by-case analysis is essential, as shown in the examples that follow.

Case 1: Melissa Lewis lifted over 2,000 images from competitors' websites and added them to her own collection of images to offer for sale over the internet. Key findings: A federal grand jury in the Eastern District of Virginia returned a one-count indictment charging Lewis with violating the Economic Espionage Act (18 U.S.C. § 1832(a)), which includes unauthorized theft of trade secrets. Seven days before trial, she entered a plea of guilty to that charge, although her defense attorney maintains her innocence. She was sentenced to 41 months in prison.



Case 2: The United States government investigated the sale of counterfeit Cisco Systems computer equipment during a 2008 undercover operation that led to "Operation Network Raider." Key findings: Ahmad Bazzi, 33, and his brother Mohammed Bazzi, 36, were arrested on Friday, 13 February 2009, when a clandestine meeting was held in the parking lot of a Target in Westland, Michigan, so that they could take possession of a duffel bag full of counterfeit computer components. The two were charged with purchasing counterfeit computer components from Yuan Jan Shang, who was arrested on Thursday 11 February 2009 after attempting to sell half a million dollars in counterfeit computer equipment to what he thought were members of a national computer networking business based in Buffalo Grove, Illinois, but was actually a government front in California.

### 6.1. Landmark Intellectual Property Crime Cases

Over the years, there have been several cases that became landmarks for various reasons such as the size of the network involved, the modus operandi, the corporate entity involved, or the international extent of the IPR crime. Some of these are detailed below.

#### Case 1: The Satyam Piracy Case

There were two raids carried out on Satyam Cinemas in the early 1990s where the prosecution alleged that the cinema owners were using decoders to intercept private satellite television signals and telecasting these movies unlawfully in their theaters.

#### Case 2: The Music World Piracy Case

In 1996, raids were carried out at the Chennai Airport and the investigators stumbled upon a large stock of pirated audio cassettes. There were also tapes of the music company's collaborations with Rahman to release audio cassettes of the Indian music icon. Some of the audio CDs were already packed in sealed jackets designed in a manner similar to the genuine Music World jackets, with the font, the

logo of Music World (a television screen), and a picture of Rahman on the cover. The investigators arrested the entire 14-member crew of the cargo airline company. They seized a total of 1100 cassettes and 37 CDs with a standard rate card of Rs. 110 per cassette and Rs. 250 per CD. The Profiteers' Economic Net worth was estimated to be US\$70. The case becomes significant in the Indian context because it was one of the initial international transport cases to be tried in India. It was also the first case in which the battle centered around the interpretation of a newly promulgated customs act. The treatment of pirates arrested at and in international transports is somewhat different from the treatment of other pirates. A little stricter.

### 7. Challenges and Controversies in Prosecuting IP Crimes

In 2011, the European Third Border Force directive on the protection of critical infrastructure requires member states to propose a list of facilities or sites, the disruption of which could have a major effect on neighboring towns, regions, or the vital functions of government. The production, distribution, and retailing of large numbers of consumer goods generate the revenues and profits necessary to sustain such long-term, billion-intensive business activities. The complex international supply chains of both legitimate and counterfeit products give rise to major competitiveness and criminal penalties for IP crimes problems for generic pharmaceutical producers, who may have to seek control, cooperation, collaboration, agreements on materials and patents over production and pharmaceutical distribution in over 100 major trading countries, plus a wider range of parallel-trading and export-importing countries.

Penalties in criminal law should be proportional to the gravity of the crime but should also seek to reform and educate both the offender and also others who may be tempted to offend. It may also act as a deterrent and be related to the amounts and volumes of products involved,



the damage caused to brand names, similar trademarks, and so on. The masses of counterfeits that are made and distributed cast doubt on the effectiveness of combating intellectual property (IP) crimes, while few existing anti-piracy operations focus on prosecuting with any vigor buyers and recipients at the end of the supply chain.

### 7.1. Jurisdictional Issues

Jurisdictional issues are problems in the international criminal process which involve several state entities that are geographically separated, with barriers of languages, filing and claiming in other countries, and where law enforcement agencies are likely to be many miles from the scene of the crime. To this end, the international community needs to solve these jurisdiction disputes, which can contribute to such things as developing general principles in the Convention or other international agreements to deal with jurisdiction, developing mutual assistance to share information and evidence about allegedly infringing goods, and developing lawful authority to take enforcement action.

In practical terms, it is most likely that the burglary would be treated as a domestic matter because the perpetrators would likely be living and working within the United States, and they and the stolen property would be located in one or another of the states or possessions. How, then, is theft—pure and simple—different from the theft of intellectual property? Jurisdiction generally is the legal authority of a nation's government to exercise power over acts, omissions, or status, or to enforce laws or regulations. For purposes of criminal, as opposed to civil, enforcement of intellectual property rights (IPR), jurisdiction is one of the most vexing problems investigators and especially prosecutors must confront. However, because jurisdictional barriers to prosecution are listed in almost every report of obstacles to effective action, it is clearly pursued in the public interest.

### 8. Global Perspectives on IP Crime Enforcement

Several members of the platform group pointed to geographic differences in terms of how IP crimes are policed and the powers of various enforcement entities. The Privacy and Authority – a Swedish Reg Authority (further in Courtright/Arvidsson, ed. 2018, from now Courtright/Arvid than Courtright 2018) developed an ambitious tripartite structure that situates the country's strategy in different national, transnational and supranational enforcement regimes. They distinguish between national common law and civil law regimes where training, office capacity, superintendency, investigatory powers and sentencing range of investigating authorities are varied (Courtright/Arvidsson 2018, 16–19). The same three basic enforcement models detailed above under the topic of civil law countries are found also in the Team Red (2017) (although these maps are now outdated).

As the USA (including American Samoa, Guam, Northern Mariana Islands, Puerto Rico and United States Virgin Islands) lacks any defined national enforcement guideline and the approach to the process of IP investigations and where the enforcement rests is highly fractured, international enforcement cooperation is hindered (USTR 2018, 13). Currently, there are no legislative changes under consideration to decrease IP penalties. A 2018 USTR report listed Iceland and Italy as failing to effectively enforce intellectual property rights (USTR 2018). Other data concerning European IP enforcement ranges from a high of twenty years imprisonment for counterfeit medicines and the lowest tariff welcome in the UK for non-deliberate infringement where letters of warning are generally used (EU IPR Enforcement Network 2012, 10). The WEAct of 2007 permits US budget agency representatives to travel to designated international destinations where significant federal intellectual property or counterfeit items infringement exists.



### 8.1. Comparison of Enforcement Strategies Across Countries

World trade is global. One of the consequences of this has been the increasing importance of intellectual property (IP) and the rise of IP infringement and counterfeiting as areas of global concern. With so many stakeholders, a plethora of strategies for intellectual property crime enforcement has evolved. The strategies which are used may reflect the perceived needs and interests of particular stakeholders, but they may also reflect the institutional tools available. There are reasons, then, why different nations might decide that crime control, rather than some other kind of law enforcement activity, would be most appropriate in the field of intellectual property. Nevertheless, the appropriateness of such an approach is potentially subject to empirical testing. In fact, there has been very little comparative intellectual property crime research. The research which has occurred has not focused on a critical comparison of enforcement strategies. In this subsection of the chapter, we provide an outline of international intellectual property crime research before we conduct some comparative analysis on enforcement strategies.

This international intellectual property crime research is spread through the research literature on criminology, the sociology of deviance, criminal and civil justice administration, health, business, the media, ethics, and medicine. Many of these studies are focused on a single type of good or organization or of intellectual property crime. Others examine cross-jurisdictional issues: the scope of intellectual property is examined in Debora Halbert's book *Intellectual Property in Common Law and Civil Law*; trafficking in counterfeit goods and the cross-jurisdictional cooperation offered by the TRIPS Agreement are examined in Chiu Man Cheng's doctoral thesis. More common than any other is the type of study which concentrates not on the definition of intellectual property but on the enforcement of it. These research studies explore the

preference for self-regulatory or command appellate of law breaking, the signaling priorities of the enforcement strategies, the qualities and thresholds of the regulation, and the resultant definition of an "outlaw" or the authentic and responsible owner.

### 9. Prevention and Deterrence Strategies

Prevention and Deterrence Strategies. As the old saying goes, "an ounce of prevention is worth a pound of cure," and this truism is no less pertinent in the context of intellectual property crimes. By taking proactive measures, it is possible to reduce the occurrence of intellectual property crimes. In particular, given intellectual property crimes are almost entirely committed by commercial entities for some cost-benefit tradeoff, conducting cost-benefit analyses of various methods of deterring criminal conduct can be particularly illuminating.

The following section examines at length the various proposals in this literature, which can broadly be grouped into two categories: reducing the benefits of criminal conduct, and increasing the risks associated with criminal conduct. The proposals mainly look at how best to (i) reduce an organization or nation's readiness to purchase counterfeit goods, (ii) either reduce or ensure that reaping the rewards for intellectual property crime is more dangerous, or (iii) increase the difficulty associated with undertaking an intellectual property crime. This can be achieved by, for instance, educating young people, collaborating with delivery companies, and reducing corruption. Additionally, it might therefore be expected that strategies that involve educational campaigns that are targeted at buyers of counterfeit products (or indeed campaign to broadly increase the veracity of media more generally) are effective to prevent intellectual property offenses.

#### 9.1. Public Awareness Campaigns

7.137 As law enforcement agencies have emphasized, the main aim of educating consumers and owners is to deter them from



committing IP crimes and aid in the prevention and detection of these acts. Ultimately, public education should both change consumer behavior and foster demand for legitimate products and services. The initiatives proposed by industry and enforcement agencies should complement rather than duplicate education strategies that are already being undertaken. Public awareness campaigns can also have the added benefit of educating those people on the "fringes of IP offending" about legal avenues, such as obtaining a copyright license. As was the case with child sex tourism, expect to attract, not repel offenders. However, if done properly, a campaign will not necessarily involve educating potential criminals about the distinctive use of intellectual property.

7.138 Those are unlikely to see such property and counterfeit products as a "crime" and potential consequences may thus be viewed upon as simply a harm to a company and not society at large. Rather, they may need some more education about why caring about trademark theft is in their own interests. In any event, if a public education program has only the effect of getting such communities involved and investing in policing and protecting corporate intellectual property rights, this would be a success. Once communities involve themselves in the prosecution of petty intellectual property theft, they may well be open to educating their younger members about the consequences of stealing such products. Industry response should be that children need to be told about dangers when they are old enough to commit an offense. Insist that "Talking to kids about the dangers of intellectual property theft" is just a necessary adjunct to campaigns aimed at the types of communities already shown to become involved in public order offenses.

## 10. Technological Advancements in IP Crime Detection

Detecting and eliminating intellectual property crimes has become an ever-increasing challenge in recent years. This is due, in part, to

the overwhelming number of crimes that are being committed and the ever-evolving means by which to commit them. Technological advances have spawned numerous creations, from lightweight, effective reading glasses to high-definition televisions. These products generate significant revenue streams for those who develop them. Unfortunately, such technological advances have also spawned crimes. This problem, made worse by globalizing economies and the easy accessibility of "sellable" material on the Internet, has caused a ripple effect: the production of suspicious IP has grown worldwide.

In an effort to stem this tide of forged, counterfeited, and pirated materials, the "good guys" have also evolved—advancing, and in many cases revolutionizing, the tools and techniques used in this fight. Various sensors have been developed or repurposed; significant effort has been made, both in academia and in industry, to develop novel force-detecting technologies based on a collection of other biometrics. These techniques require the development of state-of-the-art databases to compare an article and to store every database record. DNA and botanical classifying systems have been used to defeat fingerprints. Major advances have also been made in the field of forensics, even to the point of touching an object's surface allows the identification of the person to whom the object belongs. These and other technological advancements will be explored throughout the rest of this paper.

### 10.1. Use of Artificial Intelligence

Detection of intellectual property crimes is a challenging task, as most of it occurs online and it is difficult to distinguish them from legitimate activities. The involvement of artificial intelligence (AI) in detection may look surprising but is not very exceptional. In recent years, AI is frequently used for detection of fraudulent activities apart from various other fields. Large numbers of artificial intelligence-based systems are being used to detect fraudulent



activities, e.g. anomalies in credit card transactions or telecommunication networks. These approaches are mainly of four types: neural networks, decision trees, genetic algorithms, and case-based reasoning. They aid in studying and distinguishing the unique patterns than the hash value manipulation in the detection process. Several US patent applications have been filed outlining various technical innovations in the detection of counterfeit, including holographic imaging techniques, and the use of the hexagonal array, physical encoding, and ghosted imaging. IBM's latest innovation in this area is a method of redundancy in watermark detection, in which a random curve pattern associated with watermarks is provided, to speed up the watermark verification process.

Proactive attempts to develop technology and technical equipment capable of detecting both online and physical illegitimate IPR-infringing activities are also underway, although in a more experimental stage. For instance, Japanese companies are developing technology that can prevent fingerprints from being used in identity theft online, and music producers are working on employing artificial intelligence in music detection systems in the battle against peer-to-peer file sharing. Microsoft Research UK has been developing a system to try to work out how one of the main Russian online auction sites (Molotok) is being gamed by criminals. They have developed graph models of a sub-network of suspicious accounts on Molotok and found likely evidence of a set of accounts operating between them. Moreover, they also employ a variety of other technical tools like neural network algorithms for the early detection of illegitimate activities online, as well as customization of data mining tools to track the cases of fraud. They have found that the sophistication of these networked fraudsters varies widely, from people using stolen credit cards and fake delivery addresses in the UK, to gangs who can alter their delivery address (but not others) through a corrupt postal worker. In this way, the use of a variety of data analysis

tools for the early detection of illegitimate activities is proving useful in the identification and prevention of tricksters operating on a variety of online networks.

## 11. Future Trends in IP Crime Enforcement

Two sub-sections are proposed for this section. The first would be global crime trends, while the second sub-section would be a survey of practitioners and stakeholders.

### 11.2 Global Crime Trends

Today's mega trends suggest that IP crime is likely to continue to be on the strategic enforcement radar. The increase in the use of the internet and changing social user patterns are such that IP theft is set not only to continue but to rapidly increase. Cybercrime, perhaps one of the largest drivers of IP crime, is likely to continue to grow. Both consumers and companies will find it hard to draw the line between what is genuine or counterfeit, copyrighted or pirated, trade secret or legally available. There is unlikely to be any significant shift at policy level due to the strong economic justifications for continued focus on IP crime enforcement.

### 11.3 Survey of Practitioners and Stakeholders

The Enforcement Database (EDB) contains a section on stakeholder views on future IPR criminal enforcement. The 123 responses form the basis of the following short synthesis. The trends analysed below by no means showcase all stakeholder comments and observations. These are, instead, policy relevant and necessary, potential developments and shifts in the area of IPR criminal enforcement that stakeholders see as continuing.

#### 11.1. Impact of Emerging Technologies

It is no surprise that the very technologies that are the subjects of intellectual property have the potential to serve as tools for use by enforcement agents. What may come as a surprise is the emphasis of the individuals responding to PACE that private-sector technology is not, in fact, an active part of their



strategy. In the future, with increasing concerns over disruption strategies, it is possible that industry will not only share threat intelligence with government but also very specific identification and exploitation of vulnerabilities. Innovators are highly unlikely to provide law enforcement with access to reduced capabilities, not simply because they are unacceptable but because they run counter to the objectives of the rule of law.

What is clear is that investigators desire the development of technical agnostic tools (a commendable goal) and that between the wide array of options available at no cost, the trend by professional criminals will be the technical low road—and that will drive the professional criminal to crime against nations, firms, and individuals. Without some degree of cybercrime specialization, we cannot expect our legal authorities to be capable of keeping up with, let alone countering, the threats posed by trained and skilled threat actors. Adequate training is essential due to the difficulty of proving guilt in a cybercrime where authorities must prove that the criminal 'intended' to commit a crime.

## 12. Conclusion and Recommendations

### Conclusion

Canada's intellectual property regime is heavily slanted in favor of large corporate rights-holders and relies heavily on copyright, trade secret, and anti-counterfeiting laws to protect intellectual property rights. Despite these efforts, individuals, such as Jamie Thomas and Barry Logan, small businesses, and large corporations (as illuminated by the *Frisner v. Vita Huset* case study) all suffer damages as a result of intellectual property theft every year. Attempts to redress these thefts have focused heavily on civil litigation on the basis of copyright law; the results of these cases demonstrate that this approach is expensive and difficult. The reputation costs of having filed such suits, particularly the \$220,000 Masonic handouts case study, can often outweigh the benefits. Criminal penalties, while traditionally

underutilized in Canada, offer the next best hope.

### Recommendations

There are other, non-SOPA-based methods of improving the legal milieu surrounding intellectual property protection in Canada. First, more empirical research on the impacts of intellectual property theft in Canada and how to reduce it with penalties would be useful. Areas of investigation might include the quantified impacts of high-profile prosecutions, whether the absence of statutory damages actually prevents the threatened theft of copyright being involved in the adult film industry, the successes directly attributable to the efforts of the RCMP and other organizations involved in anti-counterfeiting work, and the relative success of protective and deterrent approaches.

### 12.1. Policy Implications for Strengthening IP Protection

The policy relevance of this chapter is related to what can be done to strengthen the potential of the intellectual property protection system to contribute to the creation, diffusion and commercialization of knowledge and hence achieving the multiple objectives outlined in a country's national innovation system (NIS) and a national system of science, technology and innovation (STI). The generic finding of the literature review and the analysis of WIPO, OECD and other relevant reports is consistent with increases in investments and returns of jurisdictions that increase technology bark in innovation and social capital. Based on the commissioned report, the policy implications related to the IP reform process will differ on the specific level at which the reform competes.

The policy below will set out in point form the implications of the report for policy reform and the construction of systems of national and global knowledge that will enhance innovations and international competitiveness in a country. The following are the research implications for policy derived from the chapter's investigation. These are based on a review of all relevant



literature and consultative meetings with Indian stakeholders working in the IP and business fields and the international. The implications are developed into two components: those relating to the Indian context and those related to what can be expected for other countries and internationally.

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