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Intellectual Property & the Challenge of a Digital World

Poonam Kapoor^a

^aAdvocate

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Intellectual Property is the soul of the 21st century, steering growth, innovation, competitiveness, and technological advancements to great heights. It becomes essential to ensure that these valuable intellectual assets don't fall into the wrong hands. For sworn enemy countries, it might be the design of a deadly nuclear weapon, for scientists, it can be some sensitive data for a potential Coronavirus antibiotic, for a game developer, it might be the most recent first-person shooter game before its official release. In today's digital age, such information exists in the form of data stored in our computer software rather than documents in our files or folders on our desks in our office cabins. This enables any type of data theft to remain undiscovered for a very long period. In this article, the author will discuss the origin and importance of Intellectual Property rights, touch upon the most common IP theft scenarios, focus on the increased number of cyber-attacks originating from corporate and state actor groups, and ways to protect against its loss.

Keywords: *intellectual property, digital age, data theft, cyber-attacks.*

INTRODUCTION

IP theft rips off around \$600 billion of the US economy annually.¹The infamous Chinese-sponsored operation CuckooBees drew out trillions of dollars in an IP theft involving over 30

¹ 'IP Commission 2021 review' (The Commission on the Theft of American Intellectual Property, March 2021) <https://www.nbr.org/wp-content/uploads/pdfs/publications/ip_commission_2021_recommendations_mar2021.pdf> accessed 08 May 2023

Multinational Corporations serving in sensitive fields like the energy, manufacturing, and pharmaceutical sectors.² IP theft is ranked only next to operational disruptions caused due to cyberattacks by business leaders.³

Although numerous intellectual property possessions are only attainable through bodily access, the rise of digital technology has simplified theft.⁴ In the words of an enforcement officer heading the US IP division, “Advancements in technology, increased mobility, rapid globalization, and the anonymous nature of the Internet create growing challenges in protecting trade secrets.”⁵

INTELLECTUAL PROPERTY RIGHTS

The Latin word for intellect is intellectual, which refers to the ability to perceive, reason, and comprehend knowledge, ideas, and concepts. This term was first used by ancient philosophers like Aristotle and Cicero to describe the faculty of the mind that enables humans to reason, think, and learn. Innovations, literature, imaginative works, plans, and visual representations utilized when working are instances of intellectual property.⁶ Creativity and inventiveness are a vital part of the growth engine of an economy. Inventors, scientists, artists, and businesses, put a lot of time, energy, money, and thoughts into developing their ideas, creating new technological advancements, increasing job opportunities for many, and improving our standards of living, thereby spinning the wheel of our economy. For such creators to receive acknowledgment or generate revenues from their creations, they are granted rights arising from their intellectual properties. It offers writers and inventors an incentive to create works for the benefit of society by controlling how those works are used by the general public and ensuring that those involved in the creation of such works are paid for their labor.⁷ In many legal systems, IP rights have long

² ‘Operation CuckooBees: Notorious Chinese hackers took trillions of dollars from about 30 companies’ (*Wion news*, 04 May 2022) <<https://www.wionews.com/world/operation-cuckoobees-notorious-chinese-hackers-took-trillions-of-dollars-from-about-30-companies-476266>> accessed 09 May 2023

³ Stephanie Overby, ‘Protecting Intellectual Property from IP Theft’ (*Mimecast*, 14 July 2022) <https://www.mimecast.com/blog/protecting-intellectual-property-from-ip-theft/#_edn5> accessed 09 May 2023

⁴ John Patrick Gelinne et al., ‘The hidden costs of an IP breach: Cyber theft and the loss of intellectual property’ (2016) (19) *Deloitte Law Journal* <<https://www2.deloitte.com/us/en/insights/deloitte-review/issue-19/loss-of-intellectual-property-ip-breach.html>> accessed 09 May 2023

⁵ *Ibid*

⁶ WIPO Copyright Treaty 1996

⁷ *Ibid*

been acknowledged. During the fifteenth century, the city of Venice played a pioneering role in the protection of intellectual property by granting patents to safeguard innovations. This early recognition of the importance of preserving the rights of inventors and creators laid the foundation for the evolution of contemporary intellectual property (IP) laws.

However, it was not until the late nineteenth century that concerted international efforts were initiated to establish comprehensive frameworks for IP protection on a global scale. One significant milestone in this journey was the Paris Convention for the Protection of Industrial Property, which was established in 1883. The Paris Convention aimed to foster effective protection of various industrial property rights, including patents, trademarks, and industrial designs. By encouraging participating countries to adopt uniform standards and procedures, the convention facilitated the recognition and enforcement of IP rights across national borders. It introduced the principle of national treatment, ensuring that foreign inventors and creators would receive the same legal protection as domestic innovators in member states.

The adoption of the Berne Convention, which specifically focused on safeguarding the rights of authors and artists further led to establishing international standards for copyright protection, ensuring that creators' literary and artistic works would be respected and protected globally. The Berne Convention introduced crucial principles such as automatic copyright protection, granting creators exclusive rights over the reproduction and distribution of their works, and establishing minimum standards of protection that member countries were required to uphold.

The Paris and Berne Conventions were instrumental in reshaping the landscape of IP protection on an international level. These landmark treaties not only facilitated collaboration among nations but also paved the way for harmonizing IP laws and practices across different jurisdictions. Furthermore, the establishment of organizations like the World Intellectual Property Organization (WIPO) in 1967 further strengthened global cooperation in the field of IP protection. WIPO is currently responsible for administering more than 25 international IP treaties. The Universal Declaration of Human Rights Article 27 protects IP rights as well. These

pivotal milestones have played a crucial role in fostering innovation, creativity, and the global exchange of knowledge and ideas, setting the stage for the ongoing evolution of IP protection.⁸

EVOLUTION OF IP THEFT

Initially, IP stealing was a risky business performed by insiders who had physical access to all the sensitive information like files, CDs, floppy disks, etc.⁹With the onset of the digital age, the bracket of suspects now includes criminal hackers, rogue employees, company rivals, and foreign-nation-state actors, carrying out their activities while remaining under the cloak of invisibility.¹⁰IP Piracy is the King of all times, largely because it is the crown jewel of many corporates, comprising approximately 90% of the value of S&P 500 companies.¹¹It is preferred over petty thefts like stealing credit card numbers, personal data, etc.¹²The perpetrators are lured into this web as it is quick, cheaper, and a shortcut to making easy money. Be it by stealing a rival company's trade secret, or copyrighted movie, music, or book. Broadly, IP theft can occur in three different scenarios. These include human errors, privilege abuse, and malware infiltrations.¹³ Mimecast's State of Email Security 2022 report findings provide that around 90% of organizations must deal with compromised IP protection due to their irresponsible and inexperienced workforce.¹⁴For example, take the case of an Apple engineer who was dismissed from his service due to his lack of attention and extreme negligence, when his daughter started posting pictures of an unreleased iPhone including special employee-only QR codes and a notes app, containing code words of the yet-to-be-released products.¹⁵In Privilege abuse, the

⁸ 'Intellectual Property' (Cornell Law School) <https://www.law.cornell.edu/wex/intellectual_property>accessed 09 May 2023

⁹ John Patrick Gelinne (n 4)

¹⁰ *Ibid*

¹¹ Bruce Berman, 'Latest data show that intangible assets comprise 90% of the value of the S&P 500 companies' (*IP Close up*, 19 January 2021) <<https://ipcloseup.com/2021/01/19/latest-data-show-that-intangible-assets-comprise-90-of-the-value-of-the-sp-500-companies/>> accessed 10 May 2023

¹² John Patrick Gelinne (n 4)

¹³ Iliia Sotnikov, 'Intellectual Property Theft: What It Is and How to Defend Against It' (*Netwrix*, 17 March 2023) <<https://blog.netwrix.com/2019/07/23/intellectual-property-theft-what-it-is-and-how-to-defend-against-it/>> accessed 11 May 2023

¹⁴ Stephanie Overby (n 3)

¹⁵ 'Apple sacks engineer over daughter's iPhone X hands-on video' (*The Indian Express*, 31 October 2017) <<https://indianexpress.com/article/technology/mobile-tabs/apple-fires-engineer-after-daughters-iphone-x-hands-on-video-goes-viral-on-youtube/>> accessed 11 May 2023

employees or the subcontractors, access the company's confidential information, trade secrets, and other sensitive data with a malicious intent either to sell it to their rivals or start their businesses.¹⁶ The legal dispute involving Uber and Waymo (which is Google's self-driving car company) originated with Google's former employee, Anthony Levandowski, stealing trade secrets from Waymo before taking over as the director of Uber's self-driving vehicle division is a leading case law highlighting this category of abuse.¹⁷ It settled with Waymo acquiring 0.34% of Uber's equity.¹⁸ Another example could be the famous GlaxoSmithKline (GSK) pharmaceutical company, in which its former scientist transferred its trade secrets in favor of a Chinese company named Renopharma. The Great Resignation and other remote worker trends, as well as the speeding up of digital transformation and the growing trend towards cloud-based apps, have all heightened the potential for insider threats.¹⁹

As per Netwrix's 2023 Hybrid Security Trends Report, around 58% of its respondents consider their top data security threat to be emerging from the employees of the organization itself. Containment, investigation, prevention, and acting fast can only help to prevent the spread of this infection of this abuse. Malware Infiltrations constitute the last category of IP theft. Criminals access the company's confidential data using malicious technology in various ways like-keylogging (software that collects data when users feed into it), inserting man-in-the-browser software (captures everything a person enters or sees on a web browser), cross-site scripting attacks (malicious scripts are injected into otherwise benign and trusted websites), drive-by downloads (inserting malicious objects into web pages), Phishing (a type of social engineering, aims to deceive or fool computer users into taking certain actions, such as installing harmful files, clicking dangerous links, or disclosing private information like access passwords) and many more.²⁰

¹⁶ Iliia Sotnikov (n 13)

¹⁷ Kif Leswing, 'Uber and Waymo have settled their massive legal fight' (*Business Insider*, 09 Feb 2018) <<https://www.businessinsider.in/tech/uber-and-waymo-have-settled-their-massive-legal-fight/articleshow/62855151.cms>> accessed 11 May 2023

¹⁸ *Ibid*

¹⁹ *Ibid*

²⁰ '7 Best Practices to Prevent Intellectual Property Theft' (*Ekran*, 18 May 2021)

<<https://www.ekransystem.com/en/blog/best-practices-to-prevent-intellectual-property-theft/>> accessed 11 May 2023

SPOTLIGHT ON CYBER SPYING

A more sophisticated, targeted version of a cyber-attack representing a real threat to both public and private entities around the world is the advanced persistent threat (APT) attack. The attackers are typically composed of a well-experienced team, targeting high-value organizations and causing excessive damage over a prolonged period.²¹The most nefarious of them all, APT 10, is a Chinese hacker collective supported by the government that has been operating since 2009.²² It is part of a larger campaign called Operation Cloud Hopper which targets MSPs (Managed Service Providers) to gain unauthorized access to their client's sensitive data, trade secrets, and technology-related details in around 12 countries like the US, UAE, Switzerland, Brazil, Bhutan, Canada, Finland, France, Germany, India, Japan, Sweden.²³

Theft of technology rides high with another, more recent Chinese cyberespionage campaign, dubbed 'Operation CuckooBees' by Cybereason, wherein hackers siphoned off tonnes of information, ranging from vulnerable records and intellectual property to details that could further come in handy for future cyberattacks like target company's user profiles and passwords, staff emails, client data, etc, from companies located in North America, Europe, and Asia.²⁴

This attack is linked to the Winnti APT group (also known as APT 41, BARIUM, and Blackfly) which has engaged in an elaborate, multi-stage infection chain that was critical for the group to fly under the radar undetected since 2019.²⁵It compromised the Windows CLFSfeature in such a manner helping them hide their arsenal and escape detection by the conventional methods.²⁶A

²¹ Santiago Quintero Bonilla and Angel Martín del Rey, 'A New Proposal on the Advanced Persistent Threat: A Survey (2020) 10(11) MDPI <<https://doi.org/10.3390/app10113874>> accessed 12 May 2023

²² Emil Sayegh, 'Spotlight on APT10' (*Forbes*, 21 February 2023) <<https://www.forbes.com/sites/emilsayegh/2023/02/21/spotlight-on-apt10/?sh=627319da491e>> accessed 12 May 2023

²³ Kinling Lo, 'APT10: What do we know about the alleged Chinese hacking group?' (*South China Morning Post*, 21 December 2018) <https://www.scmp.com/news/china/diplomacy/article/2179107/apt10-what-do-we-know-about-alleged-chinese-hacking-group?module=perpetual_scroll_0&pgtype=article&campaign=2179107> accessed 12 May 2023

²⁴ Cybereason Nocturnus, 'Operation CuckooBees: Cybereason Uncovers Massive Chinese Intellectual Property Theft Operation' (*Cybereason*, 04 May 2022) <<https://www.cybereason.com/blog/operation-cuckoobees-cybereason-uncovers-massive-chinese-intellectual-property-theft-operation>> accessed 13 May 2023

²⁵ *Ibid*

²⁶ *Ibid*

'House of Cards approach' was formulated wherein each set relied on another subset to perform its task, thus making it almost impossible to spot any early signs of espionage in the system.²⁷

AHEAD OF THE THREAT: PROTECTING INTELLECTUAL PROPERTY AGAINST CYBERATTACK

Establishing a cybersecurity policy that increases surveillance of important information by setting up and upholding an effective IP defense foundation is a recommended practice.²⁸The coordination and alignment of an organization's IP strategy require a more comprehensive cyber risk approach that involves several processes involving development, business management, and risk control. While vital, relying on IP protection strategies to preserve a company's most valuable secrets ignores the fact that IP has value even before it reaches its' maturity state. It's crucial to recognize the worth of intellectual property (IP) and protect it while it's still developing. Long before the choice is made to register a patent, IP in its early phases of creation might be just as valuable to rivals or enemies. Due to this, the demand for quick IP protection at all stages of its lifecycle has expanded exponentially – at least in line with how quickly an organization's most valuable secrets might be accessed or stolen.²⁹IP and cyber risk should legitimately coexist with other planned goals to cater to an organization's advancement, maturity, and progression. Top executives must make sure that the organization's IP strategy's cyber risk component fits into its larger enterprise risk strategy and IT/cyber risk framework.³⁰As an illustration, the approach and criteria used to estimate IP cyber exposures should be consistent with how risks are measured in other areas of the business. A comprehensive strategy focusing on introducing cybersecurity rules that employees should follow, monitoring user access periodically, re-evaluating user roles, access rights, and privileges explaining potential threats and ways to overcome them, and charting out a further recovery plan in case data theft occurs.³¹Utilizing Blockchain Technology to create an un-alterable or immutable history of creation and ownership, and offers a technique to track down the ownership of work thereby

²⁷ *Ibid*

²⁸ '7 Best Practices to Prevent Intellectual Property Theft' (n 20)

²⁹ John Patrick Gelinne (n 4)

³⁰ *Ibid*

³¹ *Ibid*

saving time and resources in litigation, which is indispensable for an IP owner to safeguard its ownership from being challenged by any other, capitalizing on smart contracts to grant licenses or collect royalties, adding a layer of security employing internet of things.³² Conducting regular cybersecurity awareness sessions for the employees to avoid IP theft attacks also serves the purpose.

CONCLUSION

Intellectual property can be considered as a fuel that drives our economy and aids different organizations in deriving both direct and indirect revenues. Nearly 40% of the US GDP is generated by sectors that depend heavily on intellectual property.³³ It not only bolsters the economy but also contributes to the promotion of culture in a society. With the power of IP, a large pool of individuals belonging to diverse creative sectors get lauded for their works, both socially and economically, and it further galvanizes them to thrive for innovation. The adoption of Intellectual Property has not only ensured the protection of work performed by the creators but has also guaranteed the exclusion of simulated products that do not comply with international standards of safety and quality.

Unfortunately, the advent of the latest digital technologies has opened illegal routes for IP distribution, and its growth gets sabotaged when corporate and nation-state actors tend to plan attacks and rob IP owners of their innovations. This results in massive economic ramifications. Up to 21% of American CFOs think that their company was a victim of intellectual property theft.³⁴

Although stealing IP data is illegal, people who commit intellectual property theft frequently avoid being caught. Even when companies and law enforcement are successful in apprehending and prosecuting IP thieves, damage may have already been done, which is reflected as a

³² Christopher Heer and Sarah Halkyard, 'How Blockchain Can Help to Protect Intellectual Property in the Age of the Internet of Things' (*IoT For All*, 18 November 2020) <<https://www.iotforall.com/blockchain-intellectual-property-iot>> accessed 13 May 2023

³³ 'How to protect intellectual property' (*CyberTalk*, 24 August 2021) <<https://www.cybertalk.org/2021/08/24/how-to-protect-intellectual-property/>> accessed 13 May 2023

³⁴ *Ibid*

hindrance to the growth of an organization's business and a loss of competitive advantage. To many organizations, this is irreversible damage and there is no going back in time.