

Criminal Copyright Infringement: Forms, Extent, and Prosecution in the United States

IOANA VASIU & LUCIAN VASIU[†]

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ABSTRACT: This article highlights the importance of copyright industries for the developed economies and argues that criminal copyright infringement is a widespread offense, producing major economic losses for stakeholders, negatively impacting creativity, and raising significant cybersecurity and rule of law concerns. The article explains why there is a need for criminal protection of copyright protection and outlines the U.S. framework. In a comprehensive approach, based on a large corpus of data, consisting of cases brought to federal courts, in violation of Section 506 of Title 17 of the U.S. Code, and press releases and reports by law enforcement and industry groups, Section 3 describes the forms and extent of the phenomenon. Section 4 discusses essential aspects involved in the prosecution of these cases. Based on the number of cases brought to courts versus the criminal copyright infringing reports and estimates, the article concludes that this criminal phenomenon is significantly under-prosecuted and proposes a number of measures that could improve the criminal protection of copyrighted works.

KEYWORDS: *Copyright; Criminal Infringement; Streaming; Cyberlocker; Peer-to-Peer*

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1. INTRODUCTION

The role played by intellectual property (hereinafter IP) in supporting the developed economies is emphasized by several important studies.¹ In the United States, for illustration, in 2014, the eighty-one industries identified to be IP-intensive, accounted for about \$6.6 trillion in added value (38% of the GDP), and supported 27.9 million jobs;² in the European Union, the IP-intensive industries generate about €5.7 trillion annually (42% of the GDP) and 38% of all jobs.³

The industries involved in the creation and distribution of copyrighted materials represent an important part of the IP-intensive industries. Based on the level copyrighted products use, the most important are the “core industries”, which comprise music, film, software, video, performing arts, and television.⁴ The “interdependent industries”, are those involved in the production, manufacture, or sale of equipment (e.g., computers), and have the important role of facilitating the creation and use of copyrighted works.⁵

¹ Ioana Vasiu is Professor at Faculty of Law of the Babeş-Bolyai University (Romania). Contact: ioanav3@yahoo.com. She is the Coordinator of the B.B.U. Faculty of Law's Cybercrime Research Unit and a member of the BBU Scientific Council. Additionally, she is currently a member of the Board of Directors of the International Association of Penal Law (2014–2019) and external affiliated member of the Ostrom Workshop Program on Cybersecurity and Internet Governance, Indiana University (U.S.).
Lucian Vasiu, Ph.D., MBA, is a computer scientist, expert in information systems security and cybercrime prevention.

² See, e.g., OECD Committee on Digital Economy Policy, *Enquiries into Intellectual Property's Economic Impact*, DSTI/ICCP(2014)17/CHAP1/FINAL (Aug. 10, 2015); see also World Intellectual Property Organization (WIPO), *WIPO Studies on the Economic Contribution of the Copyright Industries* (2014); United Nations Conference on Trade and Development, *Creative Economy Report 2010*, UNCTAD/DITC/TAB/2010/3 (2010).

³ See U.S. Patent and Trademark Office, *Intellectual Property and the U.S. Economy: 2016 Update* (2016).

⁴ See *Communication from the Commission to the European Parliament, the Council and the European Economic and Social Council on a balanced IP enforcement system responding to today's societal challenges*, COM(2017) 707 final (Nov. 29, 2017).

⁵ OECD, *supra* note 1, at 219–20; see also Stephen E. Siwek, *Copyright Industries in the U.S. Economy: The 2018 Report* (2018), <https://iipa.org/files/uploads/2018/12/2018CpyrtRptFull.pdf>.

⁵ *Id.*

In the E.U., the copyright-intensive industries generate €915 and 11.65 million jobs annually.⁶ In the U.S., the related figures are also very compelling, for the aggregated core copyright industries,⁷ and the individual industries: in 2016, the software industry, considering the direct, indirect, and induced impacts, had a total value-added contribution to the GDP of \$1.14 trillion and supported 10.5 million jobs;⁸ in 2017, the film industry generated revenues of \$43.4 billion;⁹ in 2018, the music industry generated about \$19.6 billion.¹⁰ Moreover, related research and development (hereinafter R&D) spending is also very strong;¹¹ in 2018, the revenue for the video game industry was \$43.4 billion.¹²

⁶ See European Commission on a Digital Single Market for the Benefit of all Europeans, at 5, NA-01-19-407-EN-C (2019).

⁷ In 2017, the core copyright industries generated \$1,328 billion and employed about 5.7 million workers (the total for the copyright industries was \$2.2 trillion, with over 11.6 million workers). See Siwek, *supra* note 4, at 6, 10.

⁸ See BSA, *The Growing \$1 Trillion Economic Impact of Software*, SOFTWARE.ORG (2017), <https://software.org/reports/2017-us-software-impact/>.

⁹ See David Robb, *U.S. Film Industry Topped \$43 Billion In Revenue Last Year, Study Finds, But It's Not All Good News*, DEADLINE (July 13, 2018), <https://deadline.com/2018/07/film-industry-revenue-2017-ibisworld-report-gloomy-box-office-1202425692/> .

¹⁰ See Amy Watson, *U.S. Music Industry - Statistics & Facts*, Statista (Jan. 17, 2019), <https://www.statista.com/topics/4948/music-industry/> .

¹¹ See Shanhong Liu, *Research and development investments from the software to state economies in the United States in 2016, by key state*, Statista (Dec. 13, 2018), <https://www.statista.com/statistics/572831/united-states-key-state-software-research-and-development-investment/> (for illustration, the software R&D contributed \$24,403 billion to the economy of California and \$9.6 billion to the economy of Washington state).

¹² See U.S. Video Game Sales Reach Record-Breaking \$43.4 Billion in 2018, ENTERTAINMENT SOFTWARE ASSOCIATION (Jan. 22, 2019), <http://www.theesa.com/article/u-s-video-game-sales-reach-record-breaking-43-4-billion-2018/> .

Digital technologies, such as streaming,¹³ cyberlockers,¹⁴ and peer-to-peer (hereinafter P2P) networking,¹⁵ however, increasingly threaten protected works, by significantly facilitating and expanding the scope of copyright infringement.¹⁶ The vast majority of the academic literature agrees that copyright infringement causes a significant decrease in sales, reduces the incentives to create new high quality content, and negatively impacts the overall social welfare.¹⁷ For example, as consequence of music piracy alone, the U.S. economy is losing billions of dollars and tens of thousands of jobs annually.¹⁸

Copyright infringement also undermines the value of the protected works, the ability of right holders to negotiate with clients, and erodes business goodwill.¹⁹ Moreover, copyright infringement raises very significant cybersecurity concerns: the phenomenon can expose

¹³ Streaming “refers to the delivery of digital media content in real time, so that it may be watched, listened to, or played contemporaneously with the transfer of the media data to a recipient’s device;” for a discussion on streaming and copyright protection, see Thomas Y. Lu, *Understanding Streaming and Copyright: A Comparison of the United States and European Regimes*, 13 J. Bus. & Tech. L. 185 (2018). While streaming is an increasingly important method to lawfully copyrighted content, streaming piracy represents a massive phenomenon, see Motion Picture Association of America, *Review of Notorious Markets* (2018) at 2 (“In 2016, there were an estimated 21.4 billion total visits to streaming piracy sites worldwide”).

¹⁴ Also known as “cloud storage”, “web storage”, “webhards”, or “one-click file hosting services” (OCHs), these are sites that offer centralized online storage, allowing download (direct download cyberlockers) or hosting content streamed to users (streaming cyberlockers). Cyberlockers facilitate criminal copyright infringement and money laundering on a very large scale United States v. Kim Dotcom et al., No. 1:12CR3, Indictment at 2 (E.D. Va. Jan. 5, 2012). Cyberlockers often provide several links to a file and employ proxy services, which compound the difficulty of enforcement efforts.

¹⁵ P2P networking refers to “several different types of technology that have one thing in common: a decentralized infrastructure whereby each participant in the network (typically called a ‘peer,’ but sometimes called a ‘node’) acts as both a supplier and consumer of information resources;” there are “pure”, “centralized”, and “hybrid” P2P networks, see Columbia Pictures Industries, Inc. v. Fung, 710 F.3d 1020, 1024-6 (9th Cir. 2013). See the description of the evolution of the P2P architectures in Annemarie Bridy, *Is Online Copyright Enforcement Scalable*, 13 Vand. J. Ent. & Tech. L. 695, 698-704 (2010).

¹⁶ See U.S. Dep’t of Justice, *Prosecuting Intellectual Property Crimes* (4th ed. 2013); see also *Illegal Internet Streaming of Copyrighted Content: Legislation in the 112th Congress*, Brian t. Yeh, H. R. Misc. Doc. No 112-R41975 (2011).

¹⁷ See Brett Danaher, Michael D. Smith & Rahul Telang, *Piracy and Copyright Enforcement Mechanisms*, Working Paper 19150, National Bureau of Economic Research (2013).

¹⁸ See Stephen E. Siwek, *The True Cost of Sound Recording Piracy to the U.S. Economy*, Institute for Policy Innovation (Aug. 2007), https://www.riaa.com/wp-content/uploads/2015/09/20120515_SoundRecordingPiracy.pdf; see also Robert G. Hammond, *Profit Leak? Pre-Release File Sharing and the Music Industry*, 81 Southern Economic Journal 387 (2014).

¹⁹ See *Synopsys, Inc. v. Inno GRIT, CORP.*, No. 19-CV-02082-LHK (N.D. Cal. Apr. 23, 2019).

consumers to criminals, which, through the surreptitious collection of personal information, can result in fraud, identity theft, unwanted ads, or other harms,²⁰ such as, computer infection.²¹ Another concerning aspect to take into consideration is the fact that these copyright infringement activities can be transnational, and include enterprises such as²² conspiracy to commit racketeering,²³ money laundering schemes,²⁴ or alongside distribution of other illicit content, such as child pornography or terrorism propaganda videos.²⁵

An effective copyright protection stimulates creative output²⁶ and development conditions in the digital economy.²⁷ The enforcing of copyright comprises a number of methods or mechanisms.²⁸ There is a

²⁰ See *Promoting Investment and Protecting Commerce Online: The ART Act, the NET Act, and Illegal Streaming: Hearing Before the Subcomm. on the Intellectual Property, Competition and the Internet of the H. Comm. on the Judiciary, 112th Cong.* (2011) (statement of Michael P. O'Leary, Senior Executive Vice President, Global Policy and External Affairs, Motion Picture Association of America).

²¹ In these instances, copyright-protected content is used as malware disguise, see Andrew V. Moshirnia, *Typhoid Mario: Video Game Piracy as Viral Vector and National Security Threat*, 93 Ind. L.J. 975 (2018) (discussing the computer contamination risks in connection with copyright infringement); *see also* BSA, *Software Management: Security Imperative, Business Opportunity* (2018) (underlining that, those installing unlicensed software, face a high risk of getting infected by computer contaminants); *Digital Bait*, Digital Citizens Alliance (Dec. 2015), <https://www.digitalcitizensalliance.org/clientuploads/directory/Reports/digitalbait.pdf> (one-third of pirate websites had at least one malware incident) at 6.

²² See *United States v. Batato*, 833 F.3d 413 (4th Cir. 2016).

²³ See *United States v. All Assets Listed in Attachment A*, 89 F. Supp. 3d 813, 818 (E.D. Va. 2015) (in violation of 18 U.S.C. § 1962(d) (2019)).

²⁴ In violation of 18 U.S.C. § 1956 (2019) (prohibiting the use of criminal activity proceeds for various purposes), see *United States v. Vaulin*, No. 16 CR 438-1 (N.D. Ill. Aug. 4, 2017).

²⁵ See *Dotcom*, No. 1:12CR3, Indictment at 11 (E.D. Va.).

²⁶ See U.S. Chamber of Commerce's Global Innovation Policy Center, *Inspiring Tomorrow, U.S. Chamber International IP Index* (7th Ed. 2019).

²⁷ Copyright infringement, for instance, undermines "the continued ability of publishers to invest in and publish high quality books and journals relied upon by consumers and the scientific, academic, and medical communities", *see Amicus Curiae Brief in Support of Plaintiffs-Appellants, UMG Recordings, Inc. et al. v. Kurbanov*, No. 1:18-cv-00957-CMH-TCB (No. 19-1124) (2019). The effective protection of copyrighted works supports numerous goals, for example, "inclusive and sustainable economic growth, employment and decent work for all" (United Nations' Development Goal 8), *see United Nations, Sustainable Development Goals* (2015), <http://www.un.org/sustainabledevelopment/>.

²⁸ See U.S. Dep't of Commerce Internet Policy Task Force, *Copyright Policy, Creativity, and Innovation in the Digital Economy* (2013) at 42 *et seq.*; *see also* Maria Strong, *Enforcement Tools in the U.S. Government Toolbox to Support Countries' Compliance with Copyright Obligations*, 40 Colum. J.L. & Arts 359 (2017) (discussing the Government tools or mechanisms for copyright protection: for instance, bilateral and regional free trade agreements and the use of Special 301, an yearly review of the state of IPR protection and enforcement worldwide, to encourage the IP law improvement and compliance).

very large body of academic literature that discusses aspects pertaining to copyright's role and its protection in the digital environment,²⁹ however, there lacks a comprehensive examination of the phenomenon from a criminal enforcement perspective.

This article presents a comprehensive analysis of the most important aspects involved in cases of criminal infringement of copyright and argues that criminal copyright enforcement should play an important role in the protection of creativity, economic investment and growth, and the rule of law, in general. For instance, illegal proceeds,³⁰ obtained through the infringement of protected works, can be used in the perpetration of serious crimes, such as including human or drug trafficking.

The article proceeds as follows: Part 2, after introductory remarks, explains the copyright protection framework and why there is a need for criminal copyright provisions. Based on a large corpus of data, consisting of cases brought to federal courts, law enforcement press releases, and reports from industry groups, Part 3 describes the forms and extent of the phenomenon. Part 4 discusses important issues encountered in the prosecution of cases in violation of Section 506 of Title 17 of the U.S.C.:

²⁹ See Johnathan Ling, *Argh, No More Pirating America's Booty: Improving Copyright Protections for American Creators in China*, 29 Fordham Intell. Prop. Media & Ent. L.J. 313 (2019); see also Martin Husovec, *The Promises of Algorithmic Copyright Enforcement: Takedown or Staydown? Which Is Superior? And Why?*, 42 Colum. J.L. & Arts 53 (2018); Annemarie Bridy, *Internet Payment Blockades*, 67 Fla. L. Rev. 1523 (2016); Sara K. Morgan, *The International Reach of Criminal Copyright Infringement Laws—Can the Founders of The Pirate Bay Be Held Criminally Responsible in the United States For Copyright Infringement Abroad?*, 49 Vand. J. Transnat'l L. 553 (2016); Jeff Yostanto, *The Commercial Felony Streaming Act: The Call For Expansion of Criminal Copyright Infringement*, 20 Marq. Intellectual Property L. Rev. 315 (2016); Ross Drath, *Hotfile, Megaupload, and the Future of Copyright on the Internet: What can Cyberlockers Tell Us About DMCA Reform?*, 12 J. Marshall Rev. Intell. Prop. L. 205 (2012); Sean B. Karunaratne, Note, *The Case Against Combating BitTorrent Piracy Through Mass John Doe Copyright Infringement Lawsuits*, 111 Mich. L. Rev. 283 (2012); Julie E. Cohen, *Copyright as Property in the Post-Industrial Economy: A Research Agenda*, 2 Wis. L. Rev. 141 (2011); Julie L. Ross, *A Generation of Racketeers? Eliminating Civil RICO Liability for Copyright Infringement*, 13 Vand. J. Ent. & Tech. L. 55 (2010); Peter K. Yu, *Enforcement, Economics and Estimates*, 2 WIPO Journal 1 (2010); Mark A. Lemley & R. Anthony Reese, *Reducing Digital Copyright Infringement without Restricting Innovation*, 56 Stan. Tech. L. Rev. 1345 (2004); Eric Goldman, *A Road to No Warez: The No Electronic Theft Act and Criminal Copyright Infringement*, 82 Or. L. Rev. 369 (2003); Matt Jackson, *From Broadcast to Webcast: Copyright Law and Streaming Media*, 11 Tex. Intell. Prop. L.J. 447 (2003).

³⁰ Property obtained, directly or indirectly, as the result of criminal copyright infringement activity, see 18 U.S.C. § 981 (2019).

legal elements, extraterritorial infringement, sentencing, and prosecution data. Finally, the article outlines a number of measures that could improve the criminal protection of copyrighted works.

2. COPYRIGHT PROTECTION

2.1. INTRODUCTORY REMARKS

Copyright protection is territorial: the law recognizes rights as national rights or regional rights (established by regional groupings, for instance, the E.U.), and it “recognizes the rights as extending only as far as the prescriptive jurisdiction of the country or the regional grouping that grants or recognizes the Rights”.³¹ The concept and the related rights in the national legislation are, however, consistent with the provisions of the Berne Convention for the Protection of Literary and Artistic Works, the WIPO Copyright Treaty, the WIPO Performances and Phonograms Treaty, the Rome Convention, the Agreement on Trade-Related Aspects of Intellectual Property Rights, and other international conventions, which partially standardized copyright laws.

The predominant philosophical framework in the U.S. copyright law is utilitarian:³² the fundamental objective of copyright protection is to foster creativity,³³ to “promote the Progress of Sciences and useful Arts”.³⁴ Copyright protection aims to “motivate the creative activity of authors and inventors by the provision of a special reward”,³⁵ and to ensure that there is a fair return for creative works. “The ultimate aim is,

³¹ Marketa Trimble, *Undetected Conflict-of-Laws Problems in Cross-Border Online Copyright Infringement Cases*, 18 N.C. J.L. & Tech. 119, 122 (2016).

³² See Peter S. Menell, Mark A. Lemley & Robert P. Merges, *Intellectual Property in the New Technological Age: 2018* (2018) at 498–9 (discussing different philosophical perspectives of copyright protection).

³³ See Warner Bros. Inc. v. Am. Broad. Cos., 720 F.2d 231, 240 (2d Cir. 1983).

³⁴ U.S. Const. Art. I, § 8, cl. 8.

³⁵ Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417 (1984).

by this incentive, to stimulate artistic creativity for the general public good".³⁶ In other words, "the economic rationale for copyright is that without this protection, others could free ride on the efforts of creators and hence suppress the supply of creative works".³⁷

Copyright protection also aims to trade off "the costs of limiting access to a work against the benefits of providing incentives to create the work in the first place".³⁸ Therefore, the copyright protection framework attempts to maintain a balance between "the interests of copyright owners in being compensated for uses of their works and deterring infringers from making market-harmful appropriations of their works, on the other"³⁹ and the larger public interest, such as education, research, or access to information.⁴⁰

In the U.S., copyright protection dates back to 1789, when the Congress passed "a bill to promote the progress of science and useful arts, by securing to authors and inventors the exclusive right to their respective writings and discoveries".⁴¹ A variety of works can enjoy copyright protection (e.g., literary and musical works, motion pictures, sound recordings, computer programs, photographs, audiovisual multimedia work, etc.).⁴² However, the protection is limited to "original

³⁶ Twentieth Century Music Corp. v. Aiken, 422 U.S. 151 (1975).

³⁷ OECD, *supra* note 1, at 218.

³⁸ William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. Legal Stud. 325, 326 (1989).

³⁹ Pamela Samuelson, *The Copyright Principles Project: Directions for Reform*, 25 BERKELEY TECH. L.J. 1175, 1176 (2010).

⁴⁰ See Haochen Sun, *Copyright Law as an Engine of Public Interest Protection*, 16 Nw. J. TECH. & INTELL. PROP. 123 (2019) (discussing aspects concerning the fair use doctrine in the context of copyright protection); see also Joseph A. Gerber, *Locking Out Locke: A New Natural Copyright Law*, 27 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 613, 644 (2017) ("gives owners their due but also facilitates a system for continuing greater social understanding and flourishing"); Howard B. Abrams, *Originality and Creativity in Copyright Law*, LAW CONTEMP. PROBS., Spring 1992, at 3 ("Copyright law can be broadly viewed as a system seeking an appropriate legal balance between the rights of authors and publishers on one hand and the rights of users and consumers on the other"); *Universal City Studios*, 464 U.S. at 429 ("balance between the interests of authors and inventors in the control and exploitation of their writings and discoveries on the one hand, and society's competing interest in the free flow of ideas, information, and commerce on the other hand").

⁴¹ Eldred v. Ashcroft, 537 U.S. 186, 123 S. Ct. 769, 154 L. Ed. 2d 683 (2003).

⁴² Copyrightable subject matter are "original works of authorship fixed in any tangible medium of expression". See 17 U.S.C. § 102(a) (2019).

intellectual conceptions of the author”,⁴³ and cannot cover “any idea, procedure, process, system, method of operation, concept, principle, or discovery”.⁴⁴ The federal copyright protection can be found primarily in Title 17 of the U.S.C.: Sections 101 through 1101 (the “Copyright Act”).

Copyright protection subsists “in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, directly or with the aid of a machine or device”.⁴⁵ A work is considered “fixed” when its embodiment “is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration”.⁴⁶ The copyright in a protected work, “vests initially in the author or authors of the work”, or, when there are more than one author of the work, the authors are co-owners of the copyright.⁴⁷

Copyright protection “subsists from its creation and, except as provided by the following subsections, endures for a term consisting of the life of the author and 70 years after the author’s death”; for joint works, which have two or more authors, “who did not work for hire, the copyright endures for a term consisting of the life of the last surviving author and 70 years after such last surviving author’s death”; in the case of anonymous, pseudonymous, or works made for hire,⁴⁸ copyright lasts “for a term of 95 years from the year of its first publication, or a term of 120 years from the year of its creation, whichever expires first”.⁴⁹

⁴³ *Burrow-Giles Lithographic Co. v. Sarony*, 111 U. S. 53 (1884).

⁴⁴ 17 U.S.C. § 102(b) (2019).

⁴⁵ *Id.* § 102(a).

⁴⁶ *Id.* § 101.

⁴⁷ *Id.* § 201(a).

⁴⁸ A “work made for hire” is “a work prepared by an employee within the scope of his or her employment” or “a work specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire”. See *Id.* § 101.

⁴⁹ *Id.* § 302.

2.2. EXCLUSIVE RIGHTS

Section 106 of Title 17 of the U.S.C. sets out the copyright owner's exclusive rights:

- (1) to reproduce the copyrighted work in copies or phonorecords;
- (2) to prepare derivative works based upon the copyrighted work;
- (3) to distribute copies or phonorecords of the copyrighted work to the public by sale or other transfer of ownership, or by rental, lease, or lending;
- (4) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works, to perform the copyrighted work publicly;
- (5) in the case of literary, musical, dramatic, and choreographic works, pantomimes, and pictorial, graphic, or sculptural works, including the individual images of a motion picture or other audiovisual work, to display the copyrighted work publicly; and
- (6) in the case of sound recordings, to perform the copyrighted work publicly by means of a digital audio transmission.

These rights are subject to certain exceptions and limitations.⁵⁰ The term "copies" is defined as "material objects, other than phonorecords, in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device".⁵¹ "Phonorecords" are "material objects in which sounds, other than those accompanying a motion picture or other audiovisual work, are fixed by any method now known or later developed, and from which the sounds can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device".⁵²

⁵⁰ See *Id.*, §§ 107-122. Unauthorized uses of copyrighted works may not amount to infringing: "An unlicensed use of the copyright is not an infringement unless it conflicts with one of the specific exclusive rights conferred by the copyright statute", see *Universal City Studios*, 464 U.S. at 447.

⁵¹ *Id.*, § 101.

⁵² *Id.*

The term “reproduction” comprises a broad array of conduct, such as plagiarizing portions of someone’s work, “ripping” audio tracks into MP3 format, making a copy of a movie on DVD; etc.⁵³ The term “display” refers to showing a copy of a work, “directly or by means of a film, slide, television image, or any other device or process or, in the case of a motion picture or other audiovisual work, to show individual images nonsequentially”.⁵⁴

To perform or display a work “publicly” means—

(1) to perform or display it at a place open to the public or at any place where a substantial number of persons outside of a normal circle of a family and its social acquaintances is gathered; or (2) to transmit or otherwise communicate a performance or display of the work to a place specified by clause (1) or to the public, by means of any device or process, whether the members of the public capable of receiving the performance or display receive it in the same place or in separate places and at the same time or at different times.⁵⁵

The term “transmit” means to “communicate it by any device or process whereby images or sounds are received beyond the place from which they are sent”.⁵⁶ Illegal streaming of copyrighted works is considered to infringe “public performance” or “public display” rights, rather than the “reproduction” or “distribution” rights.⁵⁷ The term “distribution” is not defined; it can take several forms, including “by making available a copyrighted work, even without disseminating actual copies of it”.⁵⁸

⁵³ See U.S. Dep’t of Justice, *supra* note 16, at 36.

⁵⁴ 17 U.S.C. § 101 (2019).

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ United States v. Am. Soc’y of Composers, Authors, and Publishers, 485 F. Supp. 2d 438, 442-47 (S.D.N.Y. 2007).

⁵⁸ Vaulin, No. 16 CR 438-1 (N.D. Ill.). See Peter S. Menell, *In Search of Copyright’s Lost Ark: Interpreting the Right to Distribute in the Internet Age*, 59 J. COPYRIGHT SOC’Y U.S.A. 1 (2011) (for a comprehensive analysis of the term “distribution”). For reference, the Italian Copyright Statute, defines “distribution” in Art. 17 as “the right to market, place in circulation or make available to the public, by whatever means and for whatever purpose a work or copies thereof and also includes the exclusive right to introduce into the territory of the countries of European Community, for distribution,

2.3. TECHNOLOGICAL AND CONTRACTUAL PROTECTION

There are various methods through which protected works can be infringed. To protect their works, copyright holders can implement a number of binding norms, through technological protection measures (hereinafter T.P.M.) and rights management information.⁵⁹ These measures permit copyright owners to restrict or block the performance, execution, display, reproduction, or distribution of protected works, or to detect infringement, as applicable. Examples of T.P.M. are access control (i.e., through encrypting or content scrambling); fingerprinting;⁶⁰ watermarking⁶¹ (e.g., visual cryptography); alphanumeric activation string or procedure; hardware key (dongle) or security device;⁶² static or dynamic obfuscation;⁶³ blockchain-based smart contracts;⁶⁴ geo-blocking;⁶⁵ tracking mechanisms for online uses;⁶⁶ etc. However, technological means of copyright protection are not foolproof, as they are

copies of a work made in countries not members of the European Community”, l.n. 633/1941(It.), <https://www.wipo.int/edocs/lexdocs/laws/en/it/it211en.pdf>; the Copyright Law of Korea, in Art. 2(23), defines “distribution” as “the transfer by assignment or rental of the original or reproduction of works,etc. to the public with or without payment by the public”, Law No. 3916, December 31, 1986 (as amended) (Kr.), <https://www.wipo.int/edocs/lexdocs/laws/en/kr/kro58en.pdf>.

⁵⁹ Information which identifies copyright-protected content, the owners of the rights and the acceptable terms or conditions of use.

⁶⁰ The marking of the copyrighted work with the identity of the licensed user, which would allow the tracing of infringements.

⁶¹ A watermark is digital data or code, embedded into the protected work (file), containing information on the copyright owner, the permitted uses, etc. See, e.g., Dolley Shukla & Manisha Sharma, *A Novel Scene-Based Video Watermarking Scheme for Copyright Protection*, 27 J. INTELL. SYS. 47 (2018). For enhanced protection, watermarks can include a variety of data, such as Geographic Information Systems (GIS) vector maps, see Ahmed Abubahia & Mihaela Cocea, *Advancements in GIS Map Copyright Protection Schemes: A Critical Review*, 76 MULTIMEDIA TOOLS APPLICATIONS 12205 (2017).

⁶² Inserted in a computer’s port, it makes possible the execution of the associated software (if it is not present, the software will not run, or will execute with reduced features).

⁶³ This technique, used primarily as software protection, involves the transformation of the code, to make it impossible or very hard to read/understand or reverse engineer.

⁶⁴ Used to automate copyright-related access and transactions, see Michèle Finck & Valentina Moscon, *Copyright Law on Blockchains: Between New Forms of Rights Administration and Digital Rights Management 2.0*, 50 IIC: INT'L REV. INTELL. PROP. COMPETITION L. 77 (2019); see also Angelo Massagli, *The Sample Solution: How Blockchain Technology Can Clarify a Divided Copyright Doctrine on Music Sampling*, 27 U. MIAMI BUS. L. REV. 129 (2018).

⁶⁵ This technology allows the restriction of access to content, based on geographical location.

⁶⁶ See Cadence Design Systems, Inc. v. Pounce Consulting, Inc., No. 17-cv-04732-PJH (SK) (N.D. Cal. Apr.1, 2019).

vulnerable to a number of attacks, which can result in their circumvention or removal.

Where appropriate, rights owners can impose contractual obligations. Copyright enforcement through Internet Service Providers includes notice and action procedures,⁶⁷ and content filtering or website blocking or shutdown.⁶⁸ Contractual terms for consumers, expressed usually through end user licensing agreement (hereinafter E.U.L.A) and/or terms of use (hereinafter T.o.U.), stipulate the acceptable or permissible forms of use, sharing, or selling. However, a breach of the license agreement does not necessarily constitute copyright infringement.⁶⁹

In order to constitute copyright infringement, licensee's violation of the E.U.L.A. or T.o.U. restrictions, there must be a nexus between the condition and the licensor's exclusive rights of copyright.⁷⁰ An example of such restrictions can be found in *Vernor v. Autodesk*:⁷¹ the software maker distributes its products in accordance with the software licensing agreement (hereinafter S.L.A.), which must be accepted by consumers before they install the product. The S.L.A. "reserves title to the software copies and imposes significant use and transfer restrictions on its

⁶⁷ The "Notice and Takedown" mechanism, enacted by the Digital Millennium Copyright Act (DMCA), is considered a standard of copyright enforcement online, see Sharon Bar-Ziv & Niva Elkin-Koren, *Behind the Scenes of Online Copyright Enforcement: Empirical Evidence on Notice & Takedown*, 50 CONN. L. REV. 1 (2017). See also Brett Danaher, Michael D. Smith & Rahul Telang, *Copyright Enforcement in the Digital Age: Empirical Evidence and Policy Implications*, 60 COMM. ACM, no. 6, 2017, at 68 (proposing demand-side and supply-side anti-piracy enforcement policies). For example, Google, as of April 22, 2019, had 4,062,447,717 URL removal requests and 2,345,678 removal requests for unique top-level domains, see *Requests to remove content due to copyright*, Google Transparency Report (2019), <https://transparencyreport.google.com/copyright/overview?hl=en>.

⁶⁸ The examination of data/Internet traffic, in order to detect copyright infringing content (for instance, through deep packet inspection (DPI), or the blocking of access to websites involved in that copyright infringements), see OECD, *The Role of Internet Intermediaries in Advancing Public Policy Objectives*, at 154, OECD Doc. 58259 (Sept. 14, 2011). See also Commission Proposal for a Directive of the European Parliament and of the Council on Copyright in the Digital Single Market, art. 13, COM(2016) 593 final (Sept. 14, 2016) which requests the online platforms to block copyright-infringing materials.

⁶⁹ Microsoft Corporation v. A&S Electronics, Inc., No. 15-cv-03570-YGR (N.D. Cal. Dec. 11, 2015).

⁷⁰ See MDY Industries, LLC v. Blizzard Entertainment, Inc., 629 F.3d 928, 841 (9th Cir. 2010).

⁷¹ Vernor v. Autodesk, Inc., 621 F.3d 1102 (9th Cir. 2010), cert. denied, 132 S. Ct. 105 (U.S. 2011).

customers”, and, according to their type, have different restrictions.⁷² The software publisher enforces and tracks the S.L.A. provisions via serial numbers and activation codes.⁷³ The software copies were conveyed as non-transferable licenses, and the resale of the software was construed as copyright infringement.⁷⁴ The court held that the copies at issue were licensed, and not sold (that is, the customer was a licensee, not an owner), therefore, the “sale” of the copies “did not convey ownership”.⁷⁵

The sale of works in digital format does not offer physical property interest, and the license terms can prohibit the resale or any subsequent transfer.⁷⁶ The arguments around the right to resell copyrighted works, which illustrate the conflict between manufacturers’ interest in maintaining revenues and consumers’ interest in monetizing their digital assets, lead to intensive examinations, both scholarly⁷⁷ and in the courts. In *Capitol Records v. ReDigi*,⁷⁸ the defendant was a company that offered an online marketplace for “used” or “pre-owned” files, purchased on iTunes. ReDigi asserted that the resale by users of their digital music files, purchased lawfully, is protected by the first sale doctrine.⁷⁹ The court, however, held that the resell process involves “reproductions of the copyrighted code”.⁸⁰ The appeal court affirmed this judgment.⁸¹ The proceedings are still ongoing, on May 10, 2019,

⁷² *Id.* at 1103.

⁷³ See *Id.* at 1104.

⁷⁴ See *Id.* at 1105.

⁷⁵ *Id.* at 1116.

⁷⁶ See Theodore Serra, *Rebalancing at Resale: Redigi, Royalties, and the Digital Secondary Market*, 93 Bos. U. L. REV. 1753, 1759–60 (2013).

⁷⁷ See Aaron Perzanowski & Jason Schultz, *Reconciling Intellectual and Personal Property*, 90 NOTRE DAME L. REV. 1211 (2015).

⁷⁸ *Capitol Records, LLC v. ReDigi, Inc.*, 934 F. Supp. 2d 640 (S.D.N.Y. 2013).

⁷⁹ *Id.* at 655.

⁸⁰ *Id.* at 649–651. The analysis of these issues is beyond the scope of this article, for in-depth discussions, see Kristin Cobb, *The Implications of Licensing Agreements and the First Sale Doctrine on U.S. and EU Secondary Markets for Digital Goods*, 24 DUKE J. COMP. INT’L L. 529 (2014); John T. Soma & Michael K. Kugler, *Why Rent When You Can Own: How ReDigi, Apple, and Amazon Will Use the Cloud and the Digital First Sale Doctrine to Resell Music, E-Books, Games, and Movies*, 15 N. C. J. L. TECH. 425 (2014).

⁸¹ *Capitol Records, LLC v. ReDigi, Inc.*, 910 F.3d 649 (2d Cir. 2018).

ReDigi requested the case to be heard at the U.S. Supreme Court.⁸²

2.4. CRIMINAL PROTECTION

In situations where their rights were infringed, copyright owners can seek remedies through civil suits.⁸³ However, they often lack the required resources to effectively combat infringements through civil actions, such actions can alienate consumers, and are “unlikely to yield the copyright holder the full amount of awarded damages”.⁸⁴ Moreover, the increasingly sophisticated deceit mechanisms used by perpetrators (e.g., reverse proxy services or third-party linking, aiming to make it difficult to identify the actual host used in the infringing activity, or the use of offshore companies, to mask the identity of the scheme operator), as well as, in a number of cases, the large-scale scope of the infringing activity and, in connection with this, the perpetration of other offenses, impose criminal provisions.⁸⁵ Criminal copyright provisions address this fact by proscribing the willful infringement of protected works, undertaken for commercial gain or for other personal benefits. Additionally, criminal prosecution is important from a general crime deterrence perspective.

Worldwide, criminal provisions differ in terms of profit motivation, criminality thresholds, criminal acts, and whether there

⁸² See *ReDigi Heads To The Supreme Court*, PR NEWSWIRE (May 14, 2019), <https://www.prnewswire.com/news-releases/redigi-heads-to-the-supreme-court-300849438.html>.

⁸³ See 17 U.S.C. § 411 (2019); see also Christopher Anthony Cotropia & James Gibson, *Copyright's Topography: An Empirical Study of Copyright Litigation*, 92 TEX. L. REV. 1981 (2014) (presenting the results of a study of about one thousand copyright cases).

⁸⁴ Geraldine Szott Moehr, *Defining Overcriminalization Through Cost-Benefit Analysis: The Example of Criminal Copyright Laws*, 54 AM. U. L. REV. 783, 799 (2005).

⁸⁵ Criminal measures also satisfy the Agreement on Trade-Related Aspects of Intellectual Property Rights art. 61, Apr. 15, 1994, 1869 U.N.T.S. 299 (“Members shall provide for criminal procedures and penalties to be applied at least in cases of wilful trademark counterfeiting or copyright piracy on a commercial scale. Remedies available shall include imprisonment and/or monetary fines sufficient to provide a deterrent.”) and Council of Europe Convention on Action Against Trafficking in Human Beings art. 10, May 16, 2005, ETS 185, the multilateral treaty on fighting cybercrimes, to which the U.S. is party (“Each Party shall adopt such legislative and other measures as may be necessary to establish as criminal offences under its domestic law the infringement of copyright”).

should be a complaint by the victim.⁸⁶ In 1897, the U.S. Congress criminalized copyright for the first time.⁸⁷ The copyright legal framework has been modernized since.⁸⁸ Criminal copyright infringement can take numerous forms, which are reflected in the comprehensive legal framework: copyright infringement for profit;⁸⁹ copyright infringement without a profit motive;⁹⁰ pre-release distribution of a copyrighted work over a publicly accessible computer network;⁹¹ circumvention of copyright protection systems;⁹² trafficking in counterfeit or illicit labels or counterfeit documentation and packaging for copyrighted works;⁹³ unauthorized fixation of and trafficking in sound recordings and music videos of live musical performances;⁹⁴ and unauthorized recording of motion pictures in exhibition facilities.⁹⁵

Copyright “infringer” is a person that “violates any of the exclusive rights of the copyright owner as provided by sections 106 through 122 or of the author as provided in section 106A (a), or who imports copies or phonorecords into the U.S. in violation of section 602”.⁹⁶ Infringement can take numerous forms, such as unauthorized

⁸⁶ In Korea, for instance, according to Art. 136 of the Copyright Act (*Jeojakkwonbeob*), the scope of criminal copyright provisions does not have a threshold for criminality, no commercial purpose requirement, and criminal liability extends to most infringing acts proscribed under the copyright law, see Law No. 3916, December 31, 1986 (as amended) (Kr.), available at <https://www.wipo.int/edocs/lexdocs/laws/en/kr/kro58en.pdf>.

⁸⁷ Act of January 6, 1897, ch. 4, 29 Stat. 481, 482.

⁸⁸ See the Amendments to the Copyright Act as a result of the Orrin G. Hatch–Bob Goodlatte Music Modernization Act of 2018; see also Prioritizing Resources and Organization for Intellectual Property (PRO IP) Act of 2008; Artists’ Rights and Theft Prevention (ART) Act of 2005; Digital Theft Deterrence and Copyright Damages Improvement Act of 1999; No Electronic Theft (NET) Act of 1997; Anticounterfeiting Consumer Protection Act of 1996; Copyright Felony Act of 1992; Sentencing Reform Act of 1984; Piracy and Counterfeiting Amendments Act of 1982. For a review of the criminal copyright legislative history, see Benton Martin & Jeremiah Newhall, *Criminal Copyright Enforcement against Filesharing Services*, 15 N.C. J.L. TECH. 101, 107–11 (2013).

⁸⁹ See 17 U.S.C. § 506(a)(1)(A) (2016), 18 U.S.C. § 2319(b) (1986).

⁹⁰ See 17 U.S.C. § 506(a)(1)(B) (2016), 18 U.S.C. § 2319(c) (1986).

⁹¹ See 17 U.S.C. § 506(a)(1)(C) (2016), 18 U.S.C. § 2319(d) (1986). See examples and a discussion about pre-release piracy in Liye Ma et al., *An Empirical Analysis of the Impact of Pre-release Movie Piracy on Box Office Revenue*, 25 Information Systems Research 590 (2014).

⁹² See 17 U.S.C. § 1201 (2016).

⁹³ See 18 U.S.C. § 2318 (2019).

⁹⁴ See *Id.*, § 2319A.

⁹⁵ See *Id.*, § 2319B.

⁹⁶ 17 U.S.C. § 501(a) (2019).

reproduction, distribution, modification, selling, leasing, marketing, giving away of protected works, etc.⁹⁷ Defendants can also be charged with violation of 18 U.S.C. § 2 (aiding and abetting criminal copyright infringement),⁹⁸ or conspiracy⁹⁹.

In general, direct copyright infringement requires the demonstration of ownership of the allegedly infringed work and the violation of at least one exclusive right granted under 17 U.S.C. § 106.¹⁰⁰ For civil liability, the general intent to copy is required; criminal liability, on the other hand, requires proof of specific intent to violate the law.¹⁰¹

The infringement of a copyrighted work is not always a straightforward determination, as underlined by the arguments found in a number of cases, for example: do search engines infringe copyrighted images when “display[ing] them on an ‘image search’ function in the form of ‘thumbnails’ but not infringe when, through inline linking, it displays copyrighted images served by another website?”;¹⁰² the embedding¹⁰³ of tweets on websites could violate the exclusive display right?¹⁰⁴ What adaptation of the source code can be authorized under 17 U.S.C. § 117?¹⁰⁵ For the purposes of 17 U.S.C. § 106(4), does playing of a video game and posting of footage of that gameplay on YouTube, amount to performing a copyrighted work publicly?¹⁰⁶

⁹⁷ See Parts 3 and 4, *infra*.

⁹⁸ “Whoever commits an offense against the United States or aids, abets, counsels, commands, induces or procures its commission, is punishable as a principal”; see, e.g., *Vaulin*, No. 16 CR 438-1 (N.D. Ill.).

⁹⁹ See 18 U.S.C. § 371 (2019); see, e.g., *United States v. All Assets Listed in Attachment A, Civil No. 1: 14-cv-969* (E.D. Va. Feb. 27, 2015).

¹⁰⁰ See *A. & M. Records v. Napster, Inc.*, 239 F.3d 1004, 1013 (9th Cir. 2001).

¹⁰¹ See Daniel Newman, Mangmang Cai & Rebecca Heugstenberg, *Intellectual Property Crimes*, 44 AM. CRIM. L. REV. 693 (2007).

¹⁰² *Perfect 10 v. Google, Inc.*, 416 F. Supp. 2d 828 (C.D. Cal. 2006).

¹⁰³ The HTML code that directs browsers to the third-party server, to retrieve content from a certain outside source; for a discussion on embedding of content and copyright infringement, see Jane C. Ginsburg & Luke A. Budiardjo, *Embedding Content or Interruption Copyright: Does the Internet Need the “Server Rule”?*, 42 COLUM. J.L. ARTS 417 (2019).

¹⁰⁴ See *Goldman v. Breitbart News Network, LLC*, No. 17-cv-3144 (KBF) (S.D.N.Y. Feb. 15, 2018).

¹⁰⁵ See *Universal Instruments Corp. v. Micro Systems Engineering, Inc.*, No. 17-2748-cv (2d Cir. May 8, 2019).

¹⁰⁶ See *Epic Games, Inc. v. Mendes*, No. 17-cv-06223-LB (N.D. Cal. June 12, 2018).

Section 506 of Title 17 of the U.S.C. proscribes the willful infringement of a copyright if

the infringement was committed—(A) for purposes of commercial advantage or private financial gain; (B) by the reproduction or distribution, including by electronic means, during any 180-day period, of 1 or more copies or phonorecords of 1 or more copyrighted works, which have a total retail value of more than \$1,000; or (C) by the distribution of a work being prepared for commercial distribution, by making it available on a computer network accessible to members of the public, if such person knew or should have known that the work was intended for commercial distribution.

The term “financial gain” includes “receipt, or expectation of receipt, of anything of value, including the receipt of other copyrighted works”.¹⁰⁷ Section 503 of Title 17 of the U.S.C. contains provisions for the impounding and disposition of infringing articles, while Section 2323 of Title 18 of the U.S.C. contains forfeiture, destruction, and restitution provisions.¹⁰⁸ The punishment for criminal copyright infringement is imprisonment (up to ten years) or a fine (up to \$250,000).¹⁰⁹

¹⁰⁷ 17 U.S.C. § 101 (2019).

¹⁰⁸ 18 U.S.C. § 2323 (2019) provides that “when a person is convicted of an offense under section 506 of title 17 or section 2318, 2319, 2319A, 2319B, or 2320, or chapter 90, of this title, the court, pursuant to sections 3556, 3663A, and 3664 of this title, shall order the person to pay restitution to any victim of the offense as an offense against property referred to in section 3663A(c)(1)(A)(ii) of this title.” If the government shows probable cause that the property in question is connected to the perpetration of criminal copyright infringement, courts will issue a seizure warrant under the authority of 18 U.S.C. §§ 981 and 2323. Seizure and forfeiture are different terms: in the online context, “seizure” results in “the domain name registry to redirect a suspected domain name to display a banner explaining that the site has been seized”, while “forfeiture” involves “the permanent involuntary divestiture of property to the government or other party without compensation due to breach or default of a legal obligation or commission of a crime”, see Karen Kopel, *Operation Seizing Our Sites: How the Federal Government is Taking Domain Names Without Prior Notice*, 28 BERKELEY TECH. L.J. 859, 866 (2013). See also, Michael Joseph Harrell, *Fighting Piracy with Censorship: The Operation in Our Sites Domain Seizures v. Free Speech*, 21 J. INTELL. PROP. L. 137 (2013); Brett Danaher & Michael D. Smith, *Gone in 60 Seconds: The Impact of the Megaupload Shutdown on Movie Sales*, 33 INT'L. J. INDUS. ORG. 1, 8 (2014) (showing that the shutdown of Megaupload, a very large cyberlocker and filesharing website, resulted in increased revenues for motion picture studios).

¹⁰⁹ 18 U.S.C. § 2319 (2019).

3. NATURE AND SCOPE OF CRIMINAL COPYRIGHT INFRINGEMENT

Criminal copyright infringement can have physical and/or cyberspace components. The protected content can be obtained in a number of ways: illegal copying or unauthorized use of protected works; bootlegging;¹¹⁰ unauthorized stream ripping sites;¹¹¹ etc. The illegal distribution vectors can take the form of selling counterfeited copies or illegally reproduced music, movies, and television programs, at flea markets;¹¹² warehouse for counterfeited copies distribution;¹¹³ counterfeit software sold online;¹¹⁴ CD and DVD replication plants;¹¹⁵ etc.

Other significant copyright infringement vectors are: the use of “key generators”, in order to create serial numbers, used to activate protected products;¹¹⁶ the selling on eBay of pirated computer programs, with codes that allow the update that software;¹¹⁷ the trading of unauthorized product key cards, containing codes that allow to fully exploit versions of copyrighted software;¹¹⁸ the dissemination of unauthorized copies of reinstallation CDs;¹¹⁹ Internet file-sharing;¹²⁰ TV signal theft;¹²¹ the unauthorized decryption of premium TV channel;¹²² etc.

¹¹⁰ See United States v. Armstead, 524 F.3d 442, 443 (4th Cir. 2008).

¹¹¹ These sites convert, without authorization, copyrighted works from licensed streaming sites into downloadable files.

¹¹² See United States v. Frison, 825 F.3d 437 (8th Cir. 2016); see also United States v. Henneberger, Criminal Action No. 2: 13-CR-167-1 (S.D. Tex. Sept. 10, 2015).

¹¹³ See Press Release, *Three Indicted for Criminal Copyright Infringement*, U.S. Dep’t of Justice, (Mar 21, 2013), <https://archives.fbi.gov/archives/sacramento/press-releases/2013/three-indicted-for-criminal-copyright-infringement>.

¹¹⁴ See United States v. Kononchuk, 485 F.3d 199 (3d Cir. 2007).

¹¹⁵ See United States v. Liu, 731 F.3d 982 (9th Cir. 2013).

¹¹⁶ United States v. Anderson, 741 F.3d 938 (9th Cir. 2013).

¹¹⁷ See United States v. Fair, 699 F.3d 508 (D.C. Cir. 2012).

¹¹⁸ Florida Man Pleads Guilty to Software Piracy Scheme, U.S. Dep’t of Justice, (Mar 2, 2017), <https://www.justice.gov/usao-wdmo/pr/florida-man-pleads-guilty-software-piracy-scheme>.

¹¹⁹ See United States v. Lundgren, No. 17-12466, Non-Argument Calendar (11th Cir. Apr. 11, 2018) (the defendant admitted to have shipped about 28,000 counterfeit discs).

¹²⁰ See Capitol Records, Inc. v. Thomas-Rasset, 692 F.3d 899 (8th Cir. 2012).

¹²¹ This involves “illegally tapping into cable TV systems as well as receiving satellite signals without authorization”, see HEDI NASHERI, ADDRESSING GLOBAL SCOPE OF INTELLECTUAL PROPERTY LAW 18 (2005); see, e.g., Operation Decrypt, in which the defendants developed sophisticated tools that allowed them to steal satellite TV signals, resulting in losses of about \$15 million to the victims, *Id.* at 53.

¹²² See United States v. Manzer, 69 F.3d 222 (8th Cir. 1995).

Online technologies, as they facilitate especially in commercial-scale infringement or access to wide audiences, are often used by perpetrators: for instance, illegally uploading¹²³ of movies online prior to their release in theaters;¹²⁴ illegal posting of movies on Facebook pages;¹²⁵ eBay selling of counterfeited products, shipped from abroad;¹²⁶ selling of illegally copied products on Amazon;¹²⁷ etc. More sophisticated technologies are increasingly used, to provide infringing content on a very large scale, often for monetary gain: for example, Internet Protocol Television services;¹²⁸ linking and streaming websites;¹²⁹ direct download cyberlockers and illicit streaming devices (hereinafter I.S.D.s)¹³⁰ and

¹²³ “Uploading” means “making an infringing item available on the Internet or a similar electronic bulletin board with the intent to enable other persons to (A) download or otherwise copy the infringing item; or (B) have access to the infringing item, including by storing the infringing item as an openly shared file. “Uploading” does not include merely downloading or installing an infringing item on a hard drive on a defendant’s personal computer unless the infringing item is an openly shared file”. See U.S. Sentencing Guidelines § 2B5.3, cmt. n. 1 (2018).

¹²⁴ See *Lancaster Man Admits Illegally Uploading Screeners of ‘The Revenant’ and ‘The Peanuts Movie’ to BitTorrent Website*, U.S. Dep’t of Justice (Feb 26, 2016), <https://www.justice.gov/usao-cdca/pr/lancaster-man-admits-illegally-uploading-screeners-revenant-and-peanuts-movie> (as result of the upload, the rights owner suffered losses of over \$1 million).

¹²⁵ See *Fresno Man Arrested on Federal Copyright Violations for Alleged Illegal Upload of ‘Deadpool’ Movie to the Internet*, U.S. Dep’t of Justice (Jun 13, 2017), <https://www.justice.gov/usao-cdca/pr/fresno-man-arrested-federal-copyright-violations-alleged-illegal-upload-deadpool-movi-0>.

¹²⁶ See United States v. Edward, No. 12-20705 (E.D. Mich. Dec. 10, 2013).

¹²⁷ See United States v. Vampire Nation, 451 F.3d 189 (3d Cir. 2006).

¹²⁸ See These services “provide stolen telecommunication signals/channels to a global audience via dedicated web portals, third-party applications and piracy devices configured to access the service”, see Motion Picture Association of America, *supra* note 13.

¹²⁹ See *Id.* at 4-5: the ring of piracy services: b9good.com, which had 27.5 million visits per month; Cda.pl, which had 68.13 million worldwide visitors; Dytt8.net, which received around 20 million visits per month, users accessing more than 12,000 infringing film titles; etc.

¹³⁰ See Office of the United States Trade Representative, *2017 Out-of-Cycle Review of Notorious Markets* (2018) at 9: “ISD piracy ecosystem, including unlawful device sellers and unlicensed video providers and video hosts, stands to bring in revenue of an estimated \$840 million a year in North America alone, at a cost to the entertainment industry of roughly \$4-5 billion a year”. I.S.D.s harm copyright owners and impair competition, by harming legitimate streaming services (e.g., Netflix or Hulu), see Federal Trade Commission, *Competition and Consumer Protection in the 21st Century* (2018) at 187.

services;¹³¹ file-swapping services,¹³² P2P networks¹³³ and BitTorrent¹³⁴ portals.

The survey of cases reveals that the most commonly infringed works are musical compositions, computer programs, movies, video games, and television shows. The infringing activity can be on a massive scale. For instance, Megaupload, a worldwide criminal conspiracy, had “more than one billion visitors in its history, more than 180 million registered users to date, and an average of fifty million daily visits, and to account for approximately four percent of the total traffic on the Internet;”¹³⁵ Operation D-Elite involved over 133,000 members, involved in the illegal distribution of tens of thousand of works, including movies before their commercial distribution in retail stores or theaters, the number of downloads amounting to over two million.¹³⁶

In numerous cases, the calculated harm to copyright holders was very significant: \$6.3 billion, through the unauthorized downloading of about a billion copies of protected works;¹³⁷ over \$100 million, in a scheme that involved the selling of illicit, unauthorized, and counterfeit software products;¹³⁸ over \$500 million in the “Mega Conspiracy”

¹³¹ For instance, for illegally streamed copyrighted sporting telecasts, see *Website Operator Indicted for Illegally Streaming Copyrighted Sporting Events*, U.S. Immigration and Customs Enforcement (Oct. 25, 2011), <https://www.ice.gov/news/releases/website-operator-indicted-illegally-streaming-copyrighted-sporting-events>; *see also* Motion Picture Association of America, *supra* note 13, at 7-9 (e.g., Openload.co/oload.tv, Rapidgator.net, Rapidvideo.com, etc.).

¹³² See *In re Aimster Copyright Litigation*, 334 F.3d 643 (7th Cir. 2003).

¹³³ See Neil Fried, *Comments of the Motion Picture Association of America, Inc., In the Matter of Competition and Consumer Protection in the 21st Century*, Hearing 4: Oct. 23-24, 2018 (the number of pirated movies and television programs downloaded in the U.S. in 2017 using p2p protocols is estimated to be 542 millions).

¹³⁴ BitTorrent is a protocol used for P2P file sharing, allowing the rapid transfer of large amounts of data over the Internet, see Strike 3 Holdings, LLC v. Doe, No. 18-cv-01173-TSH (N.D. Cal. Mar. 20, 2019).

¹³⁵ Dotcom, No. 1:12CR3, Indictment at 2 (E.D. Va.).

¹³⁶ See *Federal Law Enforcement Announces Operation D-Elite, Crackdown on P2P Piracy Network*, U.S. Dep’t of Justice (May 25, 2005), http://www.usdoj.gov/opa/pr/2005/May/05_crm_291.htm.

¹³⁷ See *Owner of Sharebeast.com sentenced for copyright infringement*, U.S. Dep’t of Justice (Mar 22, 2018), <https://www.justice.gov/usao-ndga/pr/owner-sharebeastcom-sentenced-copyright-infringement>.

¹³⁸ See *Six Defendants Plead Guilty to \$100 Million Software Piracy Scheme*, U.S. Dep’t of Justice (Dec 17, 2015), <https://www.justice.gov/usao-wdmo/pr/six-defendants-plead-guilty-100-million-software-piracy-scheme>.

copyright infringement scheme;¹³⁹ over \$1 million in the “Pirates With Attitudes” case;¹⁴⁰ over \$1.7 million in the SnappzMarket Group conspiracy.¹⁴¹

In *United States v. All Assets*,¹⁴² the conspiracy made over \$150 million in subscription and advertising fees. To conceal the copyright infringement illegal activity, the conspirators allegedly took a number of affirmative steps, including the exclusion of infringing files from the most downloaded list, the creation of fake accounts on the Megaupload and Megavideo sites, to upload files so that these would look as uploaded by users, not by the conspirators, and use of third party “linking” and “referrer” websites.¹⁴³

In another major criminal copyright infringement case, the defendants operated KAT, which allowed the distribution and reproduction of copyrighted works online, without the copyright owner’s permission.¹⁴⁴ The illegal proceeds of this conspiracy, in the order to millions of dollars, came from user donations and online advertisers.¹⁴⁵ In order to circumvent seizures and civil lawsuits, the servers used in this scheme were placed and moved in several locations around the world.¹⁴⁶ As part of their operations concealment, the defendants operated KAT and the related sites under the “Cryptoneat”, a firm based in Ukraine.¹⁴⁷

¹³⁹ See *Batato*, 833 F.3d (the reported income exceeding \$175 million).

¹⁴⁰ See *United States v. Slater*, 348 F.3d 666 (7th Cir. 2003); *United States v. Rothberg*, 222 F. Supp. 2d 1009 (N.D. Ill. 2002) (the defendants facilitated the unauthorized dissemination of copyrighted software online).

¹⁴¹ See *Fourth Conspirator in SnappzMarket Android Mobile Device App Piracy Group Convicted of Conspiracy to Commit Criminal Copyright Infringement*, U.S. Dep’t of Justice (Nov. 17, 2016), <https://www.justice.gov/opa/pr/fourth-conspirator-snappzmarket-android-mobile-device-app-piracy-group-convicted-conspiracy> (the conspirators illegally reproduced and distributed over 1 million of Android mobile device apps that were copyrighted).

¹⁴² *United States v. All Assets* Listed in Attachment A, Civil No. 1: 14-cv-969 (E.D. Va. Mar. 25, 2015).

¹⁴³ *Id.* (the linking/referrer sites do not host actual content, they link the users to third party sites).

¹⁴⁴ See *Vaulin*, No. 16 CR 438-1 (N.D. Ill.).

¹⁴⁵ See *Id.*

¹⁴⁶ See *Id.*

¹⁴⁷ See *Id.*

4. PROSECUTION ASPECTS

The differences between criminal and civil infringement regard intent, willfulness, liabilities, and procedural and evidentiary requirements. Criminal proceedings can be initiated either by the owner of the rights or by a prosecutor.¹⁴⁸ Prosecutors have “wide discretion” in criminal matters, and may decline to prosecute if they consider that there is not enough to prosecution merit or if they consider that acceptable alternative are available (for instance, restitution).¹⁴⁹ The elements common to all criminal copyright offenses are the existence of a valid copyright and the willful infringement by reproduction or distribution of the copyrighted work.¹⁵⁰

4.1. LEGAL ELEMENTS

To prove willful acting, the Government must demonstrate that the defendants knew that their acts infringed a valid copyright,¹⁵¹ that the defendants “acted with reckless disregard for, or willful blindness to, plaintiff’s rights”.¹⁵² This aspect was raised in *United States v. Wittich*,¹⁵³ where the defendants argued that “the [G]overnment has not properly alleged the copyright at issue here”, that “there is no evidence that this copyright was registered with the Copyright Office”, a “prerequisite to a copyright infringement claim”, and that the copyright statute is vague¹⁵⁴ as applied to these defendants, and therefore, must be construed as

¹⁴⁸ See INT’L ASSOCIATION FOR THE PROT. OF INTELLECTUAL PROP., CRIMINAL PROTECTION OF IP 12 (2018).

¹⁴⁹ “Prosecutors have essentially no formal external checks on their discretion”, see also Darryl K. Brown, *Cost-Benefit Analysis in Criminal Law*, 92 Calif. L. Rev. 323, 331 (2004); see also AIPPI, *supra* note 148, at 12.

¹⁵⁰ See U.S. Dep’t of Justice, *supra* note 16, at 16.

¹⁵¹ See *Id.* at 16-8. To prove the existence of a valid copyright, the prosecution usually presents a certificate of registration, see also *id.* at 23.

¹⁵² Boffoli v. Atemis, No. C18-795 TSZ (W.D. Wash. Feb. 7, 2019).

¹⁵³ United States v. Wittich, 54 F. Supp. 3d 613 (E.D. La. 2014).

¹⁵⁴ A criminal statute “must be sufficiently explicit to inform those who are subject to it what conduct on their part will render them liable to its penalties”, see *Connally v. General Constr. Co.*, 269 U.S. 385, 46 S. Ct. 126, 70 L. Ed. 322, 391 (1926).

unconstitutional.¹⁵⁵ Nonetheless, the court held that “the plain language of 17 U.S.C. §§ 102, 408, 506(a)(1)(A), 1201(a)(2)(A) and 1204(a)(1) establish that copyright protection may attach to a work regardless of whether a copyright is registered”.¹⁵⁶ Criminal prosecution for copyright infringement “do[es] not require that the copyright at issue be registered”.¹⁵⁷ The statutes cannot be construed “unconstitutionally vague simply because they do not require registration of the copyrighted work”.¹⁵⁸

Willful infringement does not require actual knowledge, “recklessness or willful blindness will be sufficient”.¹⁵⁹ In criminal copyright infringement cases, courts interpret “willfulness” as infringement committed “with knowledge that the defendant’s conduct constituted copyright infringement for purposes of 17 U.S.C. § 506(a)”.¹⁶⁰ In *United States v. Anderson*, for instance, the court of appeals held that the infringement “is willful when (1) the defendant engaged in acts that infringed the copyrights, and (2) knew that those actions may infringe the copyrights [or acted with reckless disregard for, or willful blindness to the copyright holder’s rights]”.¹⁶¹ “Willfulness” often can be proven by inference, based on the existing evidence.¹⁶²

A very good illustration for the consideration of this element is *United States v. Liu*, where the defendant denied copyright infringement knowledge or involvement: his company manufactured DVDs for a different firm; when the defendant realized that he was deceived about

¹⁵⁵ See *Id.* at 615.

¹⁵⁶ *Id.* at 629.

¹⁵⁷ *Id.*

¹⁵⁸ *Id.*

¹⁵⁹ *Unicolors, Inc. v. Urban Outfitters, Inc.*, 853 F.3d 980, 992 (9th Cir. 2017); *Erickson Productions, Inc. v. Kast*, No. 17-17157 (9th Cir. May 1, 2019).

¹⁶⁰ *United States v. Acevedo-Cruz*, Criminal No. 04-0381 (DRD) (D.P.R. Feb. 23, 2006); see also Jonathan S. Masur & Christopher Buccafusco, *Innovation and Incarceration: An Economic Analysis of Criminal Intellectual Property Law*, 87 S. CAL. L. REV. 275, 375 (2014) (“the defendant subjectively knew that the infringed works were subject to copyright and that his conduct was unlawful”). Infringement may be unintentional, for instance, in cases of misinformation regarding licensing rights or obligations.

¹⁶¹ *Anderson*, 741 F.3d at 944.

¹⁶² U.S. Dep’t of Justice, *supra* note 16, at 30-2.

the copyrights permissions involved, he filed a lawsuit against the latter.¹⁶³ The court of appeals held that “willfully”, as used in 17 U.S.C. § 506(a), connotes a “voluntary, intentional violation of a known legal duty”.¹⁶⁴ The court went on and held that “defining ‘willfully infringed’ without any requirement that the defendant knew he was committing copyright infringement, the district court instructed the jury to apply a civil liability standard”.¹⁶⁵ Moreover, the court considered that the error was compounded by the instruction given to the jury that “[a]n act is done ‘willfully’ if the act is done knowingly and intentionally, not through ignorance, mistake, or accident”.¹⁶⁶ The court’s conclusion was that, by defining willfulness such that the jury could have convicted the defendant without finding that he knew that his actions were unlawful, the district court erred.¹⁶⁷

4.2. EXTRATERRITORIAL INFRINGEMENT

Copyright’s territorial nature gives owners rights within a certain territory. The Copyright Act does not apply extraterritorially, if the acts of infringement occur entirely abroad. However, the online environment involves activities and people that span multiple jurisdictions. The copyright infringement acts committed online “have the potential to cause effects that are territorially unlimited unless the infringer - or a service the infringer uses for committing the acts - limits the territory where the effects might be felt”.¹⁶⁸

In *United States v. Vaulin*,¹⁶⁹ for example, the co-defendants, charged with operating websites involved in criminal copyright infringement, argued that they cannot be prosecuted under the Copyright

¹⁶³ *Liu*, 731 F.3d at 986.

¹⁶⁴ *Id.* at 990.

¹⁶⁵ *Id.* at 991.

¹⁶⁶ *Id.*

¹⁶⁷ See *Id.* at 992.

¹⁶⁸ Marketa Trimble, *Undetected Conflict-of-Laws Problems in Cross-Border Online Copyright Infringement Cases*, 18 N.C. J.L. TECH. 119, 122 (2016).

¹⁶⁹ *Vaulin*, No. 16 CR 438-1 (N.D. Ill.).

Act for any extraterritorial infringement, the court held that “the core theory underlying the indictment is that Vaulin aided, abetted, and conspired with users of his network to commit criminal copyright infringement in the United States”. This approach can also be found in *Spanski Enterprises v. Telewizja Polska*,¹⁷⁰ where the court held that one of plaintiff’s rights was infringed when, without authorization, the defendant made TV programs, protected by copyright, available to stream inside the U.S., even though the stream was hosted outside the U.S.

An important aspect of these cases regards the extradition of defendants, as illustrated, for instance, by the Dotcom case. The extradition of the defendant, the leader of the Mega Conspiracy, a citizen of Finland and Germany and a resident of New Zealand and Hong Kong,¹⁷¹ already spanning seven years, is still pending in New Zealand.¹⁷²

4.3. SENTENCING

The U.S. Sentencing Guidelines (U.S.S.G.) for criminal copyright infringement are contained in Section 2B5.3, which provides for an offense level of 8. The offense level for violations of 17 U.S.C. § 506 is determined, among other factors, by the value of the infringed materials that can be attributed to the defendants. The amount of infringement is the “retail value” of the “infringed item” or “infringing item”, multiplied by the number of infringing items, depending on the nature of the case.¹⁷³ “Retail value” of an infringed item is defined as “the retail price of that item in the market in which it is sold”.¹⁷⁴

¹⁷⁰ *Spanski Enterprises v. Telewizja Polska*, S.A., No. 17-7051 (D.C. Cir. Mar. 2, 2018).

¹⁷¹ See *Dotcom*, No. 1:12CR3, Indictment at 13 (E.D. Va.).

¹⁷² See Melissa Nightingale, *Kim Dotcom Extradition Legal Battle in Supreme Court Coming to an End*, NZ HERALD (June 17, 2019), https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12241050 (the case reached the Supreme Court, the main issue being whether copyright infringement amounts to a criminal offense under the New Zealand law, making it an extradition offense; even if the court grants the extradition, the Minister of Justice would have to sign the extradition paperwork, and this could lead to a request for judicial review and further appeals).

¹⁷³ U.S. Sentencing Guidelines Manual § 2B5.3, cmt. n. 2(A).

¹⁷⁴ *Id.* § 2B5.3, cmt. n. 2(C).

For infringement amounts that exceed \$6,500, the base offense level is increased by the number of levels from the table in §2B1.1, according to the amount in question.¹⁷⁵ In cases where the number of infringing items cannot be determined precisely, reasonable estimate of the infringement amount will be used, determined from the relevant information available.¹⁷⁶ A reduction by two levels is applied in cases where the offense was not committed for “commercial advantage or private financial gain”.¹⁷⁷

In *United States v. Armstead*, the court of appeals held that

‘value’ is measured not only by actual transactions that define a market, but also by face or par values assigned to commodities or goods before reaching the market, and the statute instructs that the greatest of those ‘values’ be used.[¹⁷⁸] ‘Retail,’ which is not defined at all, refers, in its ordinary meaning, to sales transactions of commodities or goods in small quantities to ultimate consumers.¹⁷⁹

For an example of the U.S.S.G. application, in *United States v. Karadimos*, the defendant-appellant argued that, by using manufacturer’s suggested retail prices for the software titles seized from him, the district court clearly calculated erroneously the amount of copyright infringement under U.S.S.G. § 2B5.3, cmt. n.2(A).¹⁸⁰ The appeal court held that “government’s proffer of the manufacturer’s suggested retail price did not demonstrate by clear and convincing evidence the retail value of the infringed software items in the market in which they were sold. U.S.S.G. § 2B5.3, cmt. n.2(C)”, and remanded the case for a new sentencing hearing.¹⁸¹

¹⁷⁵ See *Id.* §2B5.3(b)(1)(B).

¹⁷⁶ See *Id.* §2B5.3, cmt. n. 2(E).

¹⁷⁷ *Id.* §2B5.3(b)(4).

¹⁷⁸ *Armstead*, 524 F.3d at 445.

¹⁷⁹ *Id.*

¹⁸⁰ *United States v. Karadimos*, No. 11-30199 (9th Cir. Sep. 19, 2012).

¹⁸¹ *Id.*

The calculation of the actual value of the infringing items was appealed in *United States v. Lundgren*.¹⁸² The defendant admitted culpability for criminal copyright infringement, in violation of 17 U.S.C. § 506(a)(1)(A) and 18 U.S.C. § 2319(a) and (b)(1), in connection with a scheme conceived to sell copies of reinstallation discs for Microsoft Windows, without permission from the copyright owner.¹⁸³ The defendant, nevertheless, disputed the value of the reinstallation discs, and argued that the district court erred in calculating the infringement value by using the actual retail price of the infringing product “because the amount offered by the government was not for a substantially identical item”, as the reinstallation discs “were fundamentally different than the discs sold by Microsoft to small registered refurbishers because the discs sold by Microsoft came with a license, and a reinstallation disc required the user to obtain a license from somewhere else”.¹⁸⁴ The opinion of the prosecution’s expert, however, held that the software in discussion “performed in a manner largely indistinguishable from the genuine versions created by Microsoft”.¹⁸⁵ While experts identified differences in the functionality in the discs in question, the court of appeals held that the district court’s valuation of the infringed item and the determination of defendant’s base offense level were correctly determined.¹⁸⁶

4.4. PROSECUTION DATA

An important component of copyright protection is criminal enforcement. However, due to a complex set of factors, the effective criminal enforcement of copyright faces numerous, complex, and evolving challenges.¹⁸⁷ The enforcement efforts are notable: in the years

¹⁸² *Lundgren*, No. 17-12466 (11th Cir.).

¹⁸³ *See id.*

¹⁸⁴ *Id.*

¹⁸⁵ *Id.*

¹⁸⁶ *See id.* (“subject to a 14-level increase under § 2B5.3(b)(1) and § 2B1.1(b)(1)(H)”).

¹⁸⁷ See Eldar Haber, *The Criminal Copyright Gap*, 18 STAN. TECH. L. REV. 247, 247-88 (2015) (argues that there is a “gap between legislation and enforcement of criminal copyright infringements,” that “enforcement is problematic as the digital environment

2018, 2017, and 2016, the number of cases prosecuted for criminal copyright infringement, were four, eight, and ten, respectively;¹⁸⁸ in the fiscal years 2017, 2016, and 2015, in the cases prosecuted for copyright and trademark infringement, the median infringement amount was \$266,086, \$148,006, and \$107,808, respectively.¹⁸⁹ Notwithstanding that, copyright infringement remains startlingly high,¹⁹⁰ representing a very significant and growing concern for stakeholders.¹⁹¹

The in-depth examination of criminal copyright infringement cases and reports unveils the massive scope of this phenomenon: billions of protected works shared monthly without authorization;¹⁹² globally, an estimated 100 million Internet Protocol addresses are daily involved in

possesses many difficulties to enforcement agencies, such as detection, identifying suspects, cross-over jurisdictions, overseas operators, and prosecuting juveniles," and discusses potential explanations for this situation); *see also* Luis Aguiar, Jörg Claussen & Christian Peukert, *Catch Me if You Can: Effectiveness and Consequences of Online Copyright Enforcement*, 29 Info. Sys. Res. 656 (2018) (discussing the effectiveness of illegal streaming sites shutdown); Motion Picture Association of America, *supra* note 13, at 2 ("enforcement efforts are complicated when intermediaries fail to take adequate steps to ensure their services are not being used to facilitate copyright infringement"); Jason Gull & Tim Flowers, *Prosecuting Copyright Infringement Cases and Emerging Issues*, 64 U.S. ATT'YS' BULL. 18, 20 (2016); Peter K. Yu, *Enforcement, Enforcement, What Enforcement?*, 52 IDEA: J. L. TECH. 239 (2012) (discussing the challenges raised by cross-border and jurisdictional aspects and the architecture and capabilities of cyberspace); I. Trotter Hardy, *Criminal Copyright Infringement*, 11 WM. & MARY BILL RTS. J. 305, 313 (2002) ("For many individuals using the Internet, for example, the chance of being caught for occasionally downloading a copyrighted song, or uploading a copyrighted piece of software, is almost zero.").

¹⁸⁸ In violation of 17 U.S.C. § 506 (2016) and 18 U.S.C. § 2319 (2019), see U.S. Intellectual Property Enforcement Coordinator, *Annual Intellectual Property Report to Congress* (2019) at 106; *see also* U.S. Intellectual Property Enforcement Coordinator, *Annual Intellectual Property Report to Congress* (2018) at 91; U.S. Intellectual Property Enforcement Coordinator, *2016 U.S. Intellectual Property Enforcement Coordinator Annual Report on Intellectual Property Enforcement* (2017) at 80.

¹⁸⁹ See U.S. Sentencing Commission, *Quick Facts: Copyright and Trademark Infringement Offenses* (2018); *see also* U.S. Sentencing Commission, *Quick Facts: Copyright and Trademark Infringement Offenses* (2017); U.S. Sentencing Commission, *Quick Facts: Copyright and Trademark Infringement Offenses* (2016).

¹⁹⁰ See Freddi Mack, *Has the Quest to Quench Piracy Gone Too Far? Government Overreach in Forfeiture of Linking Websites*, 68 U. MIAMI L. REV. 561, 587 (2014) ("Digital copyright infringement is indisputably one of the most widespread crimes in the United States.").

¹⁹¹ "A lack of respect for the rule of law or widespread violations of intellectual property law will prevent the establishment of a safe and predictable environment for businesses and consumers alike," *see generally* U.S. Intellectual Property Enforcement Coordinator, *Annual Report on Intellectual Property Enforcement* (2010) at 6, <https://www.ice.gov/doclib/iprcenter/pdf/ipec-annual-report.pdf>.

¹⁹² See *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 545 U.S. 913 (2005).

illegal downloading;¹⁹³ in the U.S. alone, in 2017, there were about 27.9 billion visits to piracy websites;¹⁹⁴ over 78% of files on direct download cyberlockers and over 83% of files on streaming cyberlockers infringed copyright, resulting in profits of millions of dollars;¹⁹⁵ online access to illegal channels,¹⁹⁶ illegal downloads and streams,¹⁹⁷ or file sharing occurs on a massive scale, causing losses of millions of dollars to rightful owners.¹⁹⁸

5. CONCLUSION

This article, in a comprehensive approach, discussed the characteristics of the criminal copyright infringement phenomenon and important

¹⁹³ See Todd Spangler, *Pirate Bay Shutdown Has Had Virtually No Effect on Digital Piracy Levels*, VARIETY (Dec. 13, 2014), <http://variety.com/2014/digital/news/pirate-bay-shutdown-has-had-virtually-no-effect-on-digital-piracy-levels-1201378756/>.

¹⁹⁴ See Amy Watson, *Number of visits to media piracy sites worldwide in 2018, by country (in billions)*, Statista (last edited May 27, 2019), <https://www.statista.com/statistics/786046/media-piracy-site-visits-by-country/>.

¹⁹⁵ See NetNames, *Behind the Cyberlocker Door: A Report on How Shadowy Cyberlocker Businesses* (2014) ("The most profitable direct download cyberlocker generated annual profit of \$15.2m from revenue of \$17.6m"); see also Damilola Ibosiola et al., *Movie Pirates of the Caribbean: Exploring Illegal Streaming Cyberlockers*, 2018 TWELFTH INT'L AAAI CONFERENCE ON WEB AND SOCIAL MEDIA. (discussing the online video piracy in the context of streaming cyberlockers).

¹⁹⁶ See *Publishing under threat as demand for illegal content rises over 2018*, Muso (2019), <https://www.muso.com/magazine/publishing-under-threat-as-demand-for-illegal-content-rises-over-2018/> (the publishing sector, for instance: the illegal channels visits was estimated to 21.83bn in 2018).

¹⁹⁷ See *Game of Thrones Season 7 Pirated over 1 Billion Times*, Muso, <https://www.muso.com/magazine/game-of-thrones-season-7-pirated-over-1-billion-times/> (as of September 3, 2017, the Season 7 of the "Game of Thrones" had over 1 billion illegal streams and downloads, mostly through by streaming); see also Travis Clark, *The 'Game of Thrones' season 8 premiere was pirated 54 million times in 24 hours, vastly outstripping its legal audience*, BusinessInsider (Apr. 17, 2019), <https://www.businessinsider.com/game-of-thrones-premiere-pirated-54-million-times-in-24-hours-2019-4> (the premiere of the "Game of Thrones" was pirated 54 million times in 24 hours).

¹⁹⁸ See *Operator of music piracy website sentenced to 3 years in prison RockDizFile.com was second-largest online file sharing website in US*, U.S. Immigration and Customs Enforcement (Nov. 17, 2015), <https://www.ice.gov/news/releases/operator-music-piracy-website-sentenced-3-years-prison> (the site averaged about 4.5 million monthly visits, resulting in losses of more than \$10 million per month to the copyright owners). The value of the loss is measured according to the retail value of the "infringed item", see U.S. SENTENCING GUIDELINES MANUAL § 2B5.3, cmt. n. 2.

aspects involved in the prosecution of these cases. The article's findings demonstrate that criminal copyright infringement is a widespread offense, resulting in major losses for stakeholders every year, negatively impacting creativity, reducing the investments, the level of dividends and tax revenues, and raising significant cybersecurity and rule of law concerns. This would be a strong argument for the importance of criminal enforcement of copyright. However, taking into consideration the number of cases brought to courts and the criminal copyright infringement reports and estimates, it can be concluded that this criminal phenomenon is significantly under-prosecuted.

The effectiveness of the legal framework is directly linked to the extent to which it is enforced. Criminal enforcement has the very important role to ensure consistent prosecution. This would also act as deterrent for potential infringers. Consequently, there is a need to increase the determination to reduce this criminal phenomenon.

This requires a complex strategy, comprising several components: research, to determine the actual impact of criminal copyright infringement on the quality and quantity of creative output and on individual and related industries revenues; the study of approaches used in other countries, where criminal sanctions are used more commonly, in order to prioritize the enforcement efforts; the use of cost-benefit analysis tools, to determine the efficient allocation of resources; improved tools for copyright infringement reporting, takedown, seizure, illegal revenue flows blocking, and forfeiture mechanisms; enhanced international law enforcement and service providers cooperation; education of consumers and policymakers on the consequences of criminal copyright infringement and the potential security harms associated with this phenomenon; technical assistance programs; better defined responsibility for secondary liability; investigation assistance from firms and industry groups; and artificial intelligence solutions, to effectively detect and timely address criminal copyright infringements.

This article focused on one jurisdiction, however, the findings could be useful to a large, international audience. This would be particularly the case with respect to infringements committed in cyberspace. The numerous online copyright infringement cases cited in this article, potentially rendering the enforcement of rights very difficult or even impossible, imply that there is a need to better address aspects concerning cases that span cross-border, through bi- or multi-lateral Treaties or Partnership Agreements.